

Final
Site-Specific Field Sampling Plan and
Site-Specific Safety and Health Plan Attachments
Directorate of Engineering and Housing (DEH) Compound
Parcels 64 and 1)
Motor Pool Area 3100 S of 23rd Street
(Parcels 147, 72, 27, and 28)
Post Garbage Dump North of Reilly Airfield (Parcel 126)
Former Chemical Laundry and Motor Pool Area 1500
(Parcels 94, 132, 133, and 134)

Fort McClellan
Calhoun County, Alabama

Delivery Order CK005
Contract No. DACA21-96-D-0018
IT Project No. 774645

October 1998

Revision 1

Site-Specific Field Sampling Plans

Directorate of Engineering and Housing (DEH) Compound (Parcels 64 and 1)

Motor Pool Area 3100 S of 23rd Street (Parcels 147, 72, 27, and 28)

Post Garbage Dump North of Reilly Airfield (Parcel 126)

Training Aids Building 267 (Parcel 166)

Former Chemical Laundry and Motor Pool Area 1500 (Parcels 94, 132, 133, and 134)

Site Investigation

Final

**Site-Specific Field Sampling Plan Attachment
for the Directorate of Engineering and Housing (DEH)
Compound, Former PCP Dip Tank, Parcel 64(7); Building
202/215, Parcel 1(7); Building 214, Parcel 64(7);
Building 211, Parcel 64(7); Building 208, Parcel 64(7)**

**Fort McClellan
Calhoun County, Alabama**

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**Delivery Order CK005
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IT Project No. 774645**

October 1998

Revision 1

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List of Acronyms

ADEM	Alabama Department of Environmental Management
bls	below land surface
CERFA	Community Environmental Response Facilitation Act
CESAS	Civil Engineering South Atlantic Savannah (U.S. Army Corps of Engineers)
CLP	Contract Laboratory Program
COC	chain of custody
CSEM	conceptual site exposure model
DEH	Directorate of Engineering and Housing
DOD	U.S. Department of Defense
DQO	data quality objective
EBS	environmental baseline survey
E&E	Ecology & Environment, Inc.
EPA	U.S. Environmental Protection Agency
ESE	Environmental Sciences and Engineering
FTMC	Fort McClellan
GPS	global positioning system
IDW	investigation-derived waste
IT	IT Corporation
mg/kg	milligrams per kilogram
OWS	oil/water separator
PAH	polyaromatic hydrocarbon
PCP	pentachlorophenol
PID	photoionization detector
PSSC	potential site-specific chemical
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
SAP	installation-wide sampling and analysis plan
SFSP	site-specific field sampling plan
SHP	installation-wide safety and health plan
SSHP	site-specific safety and health plan
SI	site investigation
TCL	target compound list
TPH	total petroleum hydrocarbon

List of Acronyms *(Continued)*

USACE	U.S. Army Corps of Engineers
USAEHA	U.S. Army Environmental Hygiene Agency
UST	underground storage tank
VOC	volatile organic compound
WP	installation-wide work plan

Executive Summary

In accordance with Contract No. DACA21-96-D-0018, Delivery Order CK005, IT Corporation (IT) will conduct site investigation activities at the Directorate of Engineering and Housing (DEH) Compound, Parcels 64(7) and 1(7), at Fort McClellan (FTMC), Calhoun County, Alabama, to determine the presence or absence of site-specific chemicals. The purpose of this site-specific field sampling plan (SFSP) is to provide technical guidance for sampling activities at the DEH Compound site.

The DEH Compound consists of five sites: the former pentachlorophenol (PCP) dip tank, Parcel 64(7); the DEH wash rack and an oil water separator (OWS), Building 214, Parcel 64(7); the pesticide storage and mixing facility, Building 211, Parcel 64(7); the tire repair and battery shop, Building 208, Parcel 64 (7); and Building 202/215, Parcel 1(7), consisting of building materials storage, painting shop, lawn mower shop, wood shop, refrigeration shop, fog oil storage, engineering warehouse, welding shop, an electrical building, and the Department of Housing and Engineering.

The Former PCP Dip Tank. The former PCP tank was a 2,500-gallon tank used to preserve lumber. The tank was installed in the mid-1960s and reportedly held a mixture of diesel fuel, water, and PCP, a listed hazardous waste used to treat lumber. Dipping operations stopped at the site in 1981. The tank was removed and disposed of properly in October 1987.

Building 214. The DEH wash rack, Building 214 was built in 1965 and had a baffle-type OWS that is reportedly inoperable; the bypass valve was consequently closed off permanently. The system historically discharged directly into storm water drainage; however, it is not currently in use. The wash rack was rebuilt in 1991 and currently has a settling basin attached to a coalescing plate OWS.

Building 208, The Former Pesticide and Herbicide Storage Facility. Building 208 is located inside the DEH Compound. Building 208 was constructed in 1957 and was used for pesticide and herbicide storage from approximately 1971 to 1986 (Environmental Sciences and Engineering [ESE], 1998). Reportedly, pesticides for the Forestry Section were also stored at this building. In 1986, pesticide operations were relocated to Building 211. A paved surface surrounds the facility.

The tire repair shop now occupies that part of Building 208 where the former pesticide and herbicide storage facility was located. Mixing of pesticides is reported to have occurred at the job site and not on the pavement in front of Building 208 (ESE, 1998). No spills or releases have been documented at Building 208, and no evidence of spillage or stressed vegetation at the edge of the pavement was observed during the site visit.

Building 211, Pesticide and Herbicide Mixing and Storage Facility. The pesticide mixing and storage facility is located in the northwest part of the DEH Compound. The building was designed and constructed in 1960 specifically for storing and mixing pesticides, and operations began that same year. Building 211 includes a mix-rinse area inside the building for small quantity mixing (hand-held pump sprayers) and a covered mix-rinse pad, used by tractor-mounted sprayers.

Building 202/215 Administrative/General Purpose Engineering Housing Management. Building 215 was constructed in 1955 as a general purpose/administrative building. Building 202 was added in 1957. The complex currently houses the building materials storage, painting shop, lawn mower shop, wood shop, refrigeration shop, fog oil storage, engineering warehouse, welding shop, an electrical building, and the Department of Housing and Engineering.

Potential contaminant sources at the site include waste oils, fuel and fuel components, organics, herbicides, pesticides and metals resulting from pesticide mixing and storage, wash rack, activities. IT will collect 7 surface soil samples, 14 subsurface soil samples, 18 groundwater samples (14 direct-push and 4 monitoring well), 4 surface water, and 4 sediment samples at this site. Chemical analyses of the samples collected during the field program will include volatile organic compound, semivolatile organic compounds, pesticides, herbicides, dioxin, and metals. Results from these analyses will be compared with site-specific screening levels specified in the installation wide work plan, and regulatory agency guidelines.

This SFSP attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for the DEH Compound will be used in conjunction with the site-specific safety and health plan (SSHP), the habitat-specific ecological assessment work plan, and the installation-wide work plan (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan, waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

1.0 Project Description

1.1 Introduction

The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Directorate of Engineering and Housing (DEH) Compound, which includes the former pentachlorophenol (PCP) dip tank, Parcel 64(7); Building 202/215, Parcel 1(7); Building 214, Parcel 64(7); Building 211, Parcel 64(7); and Building 208, Parcel 64(7), under Delivery Order CK005, Contract No. DACA21-96-D-0018.

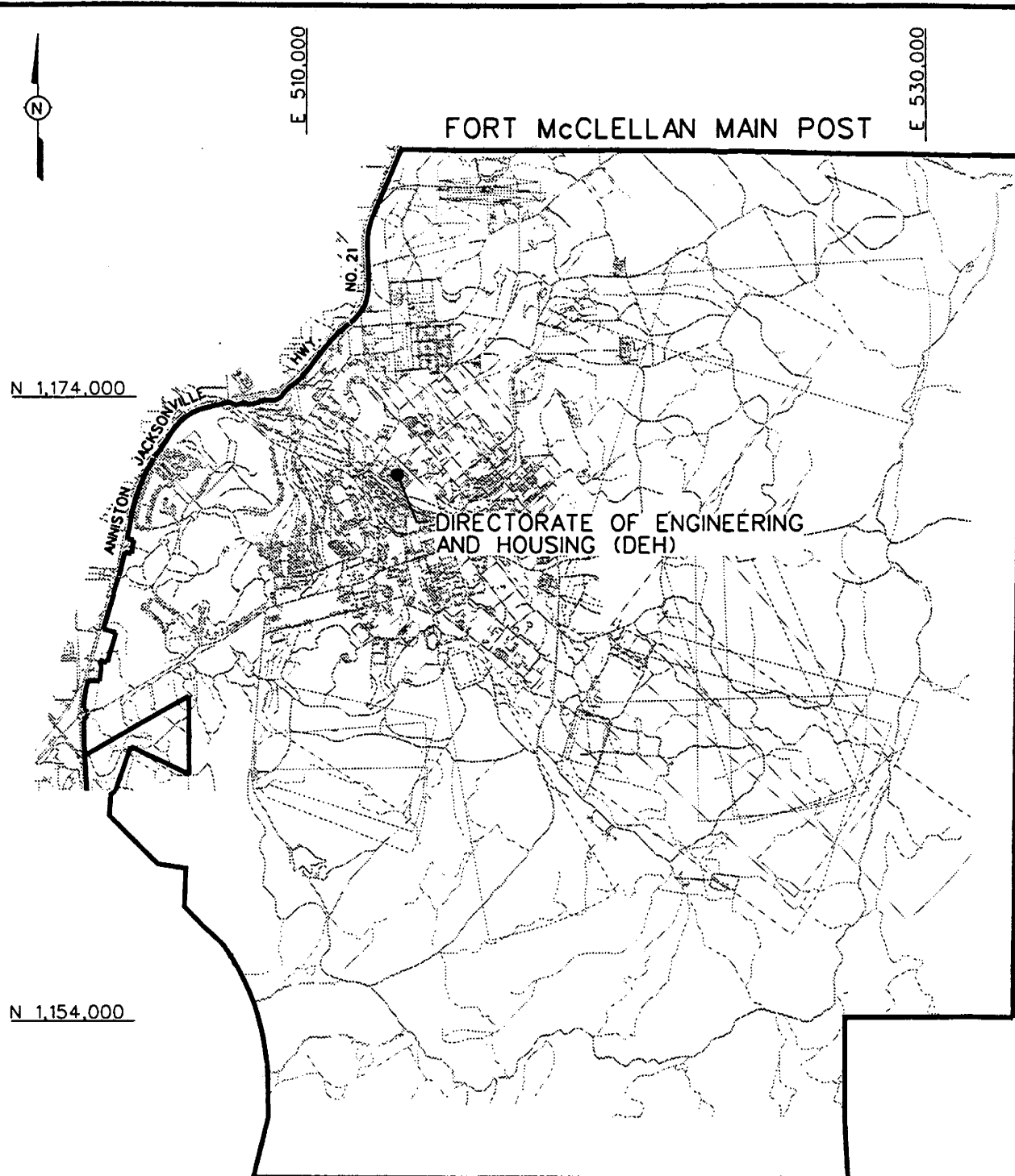
This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for FTMC has been prepared to provide technical guidance and rationale for sample collection and analysis at the DEH Compound (Figure 1-1). IT will collect samples at this site as part of an SI effort. The results of this effort will determine whether there are contaminants at this site in concentrations high enough to warrant further remedial investigation and/or action. The SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the DEH Compound site, the habitat-specific ecological assessment work plan, and the installation-wide work plan (WP) (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan (SHP), waste management plan, and quality assurance plan (QAP).

1.2 Site Description

FTMC is a U.S. Army installation located in Calhoun County, Alabama, that occupies approximately 45,679 acres. The Main Post installation is bounded on the south and west by the city of Anniston, and on the northwest by the city of Weaver. Pelham Range is 5 miles due west of the Main Post installation and adjoins Anniston Army Depot along its northern boundary. Adjoining the Main Post installation to the east is the Choccolocco Corridor, which provides an access corridor connecting the installation to the Talladega National Forest.

The DEH Compound is located in the central part of Main Post and is bounded by 6th Avenue to the northeast, Howlee Road to the southwest, 10th Street to the northwest, and 15th Street to the southeast (Figure 1-2). The study area covers approximately 9 acres. Cane Creek flows north-

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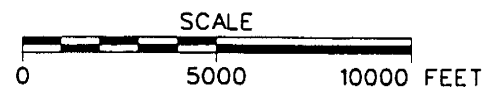
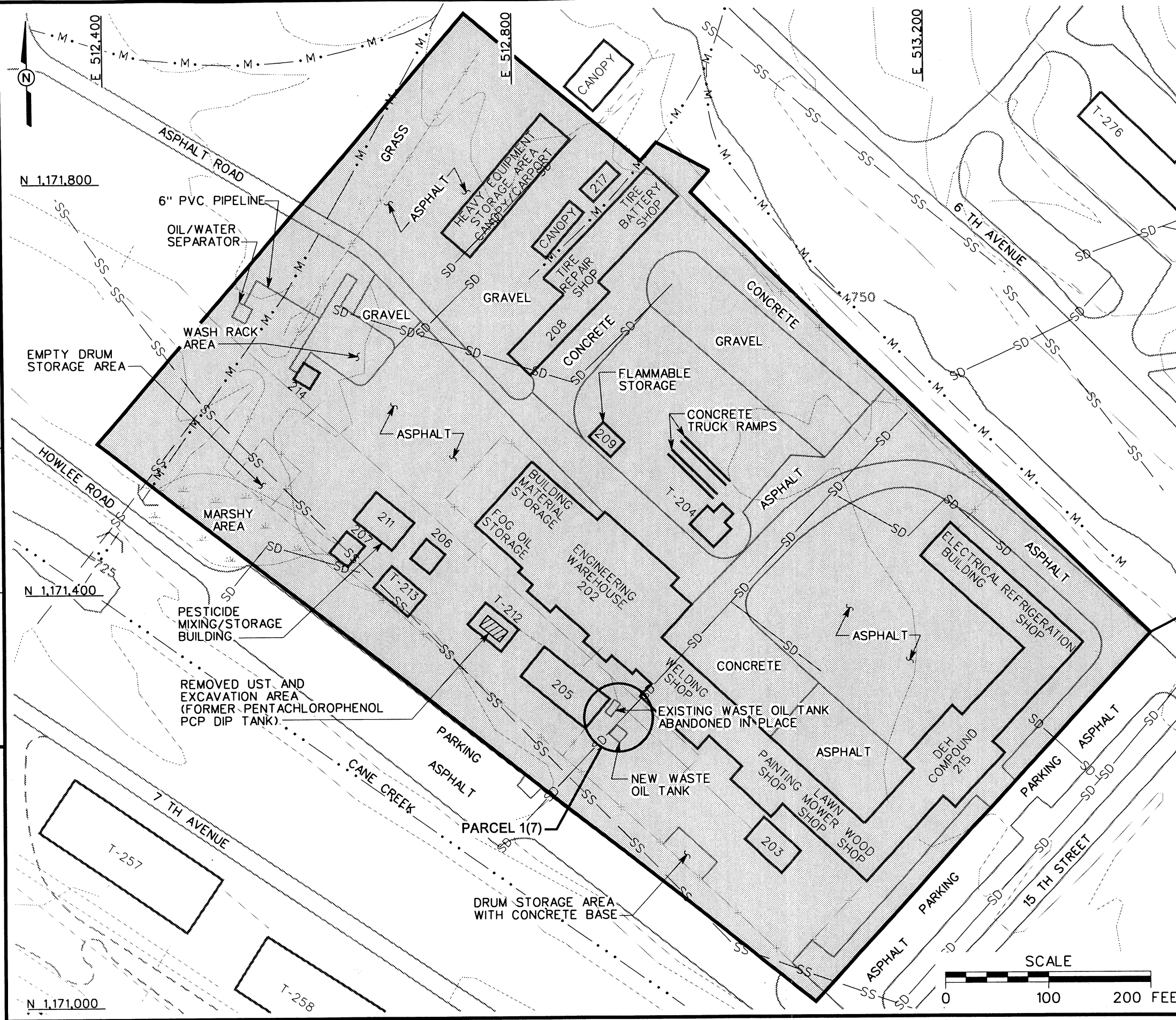
 FORT McCLELLAN BOUNDARY

FIGURE 1-1
 SITE LOCATION MAP
 DIRECTORATE OF ENGINEERING
 AND HOUSING (DEH) COMPOUND
 PARCELS 64(7) AND 1(7)
 U. S. ARMY CORPS OF ENGINEERS
 MOBILE DISTRICT
 FORT McCLELLAN
 CALHOUN COUNTY, ALABAMA
 Contract No. DACA21-96-D-0018



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- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS
 - TREES / TREELINE
 - MARSH / WETLANDS
 - PARCEL BOUNDARY
 - BRIDGE
 - CULVERT WITH HEADWALL
 - SURFACE DRAINAGE / CREEK
 - MANMADE SURFACE DRAINAGE FEATURE
 - FENCE
 - RAILROAD
 - SANITARY SEWER LINE
 - STORM DRAINAGE LINE

NOTES

1. ALL AREAS ARE ASSUMED GRASS UNLESS OTHERWISE NOTED.

FIGURE 1-2
SITE MAP
DIRECTORATE OF ENGINEERING AND
HOUSING (DEH) COMPOUND
PARCELS 64(7) AND 1(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

SCALE
0 100 200 FEET

INTERNATIONAL TECHNOLOGY CORPORATION

west and is located adjacent to Howlee Road just southwest of the DEH Compound. Manmade surface drainage features bound the site to the northwest and northeast.

The DEH Compound consists of five sites: the former PCP dip tank, Parcel 64(7); the DEH wash rack and an oil water separator (OWS), Building 214, Parcel 64(7); the pesticide storage and mixing facility, Building 211, Parcel 64(7); the tire repair and battery shop, Building 208, Parcel 64 (7); and Building 202/215, Parcel 1(7), consisting of building materials storage, painting shop, lawn mower shop, wood shop, refrigeration shop, fog oil storage, engineering warehouse, welding shop, an electrical building, and the Department of Housing and Engineering.

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Building 214. The DEH wash rack, Building 214, was built in 1965 and had a baffle-type OWS that is reportedly inoperable; the bypass valve was consequently closed off permanently. The system historically discharged directly into storm water drainage; however, it is not currently in use. The wash rack was rebuilt in 1991 and currently has a settling basin attached to a coalescing plate OWS.

Building 208, The Former Pesticide and Herbicide Storage Facility. Building 208 is located inside the DEH Compound. Building 208 was constructed in 1957 and was used for pesticide and herbicide storage from approximately 1971 to 1986 (Environmental Sciences and Engineering [ESE], 1998). Reportedly, pesticides for the Forestry Section were also stored at this building. In 1986, pesticide operations were relocated to Building 211. A paved surface surrounds the facility.

The tire repair shop now occupies that part of Building 208 where the former pesticide and herbicide storage facility was located. Mixing of pesticides is reported to have occurred at the job site and not on the pavement in front of Building 208 (ESE, 1998). No spills or releases have been documented at Building 208, and no evidence of spillage or stressed vegetation at the edge of the pavement was observed during the site visit.

Building 211, Pesticide and Herbicide Mixing and Storage Facility. The pesticide mixing and storage facility is located in the northwest part of the DEH Compound. The building was designed and constructed in 1960 specifically for storing and mixing pesticides and operations began that same year. Building 211 includes a mix-rinse area inside the building for small quantity mixing (hand-held pump sprayers) and a covered mix-rinse pad, used by tractor-mounted sprayers. The building was originally equipped with a sump to collect rinse water from the covered mix-rinse pad for subsequent carbon filtration. This water was to be discharged to the sanitary sewer system (Roy F. Weston, 1990); however, the waste handling system was believed to be performing poorly, so the floor drain was filled with cement and the mix-rinse pad is no longer used (ESE, 1998).

Building 202/215 Administrative/General Purpose Engineering Housing Management. Building 215 was constructed in 1955 as a general purpose/administrative building. Building 202 was added in 1957. The complex currently houses the building materials storage, painting shop, lawn mower shop, wood shop, refrigeration shop, fog oil storage, engineering warehouse, welding shop, an electrical building, and the Department of Housing and Engineering.

The area around the compound consists of housing, recreational, training, and administrative buildings. The site is located on a nearly flat broad crest, approximately 740 feet above sea level. The site is approximately 500 feet wide (northeast to southwest) by 800 feet long (northwest to southeast) and is bounded on all sides by a chainlink fence. Shallow groundwater at the site is probably controlled by surface drainage and/or topography.

The soil type at the DEH Compound is classified as Montevallo (MtC3). Montevallo soil type is generally characterized by severely eroded, shaly silty-clay soils developed from interbedded shale and fine-grained sandstone. They consist of friable, shallow, well-drained, shaly silt loam and shaly silty clay loam soils on slopes of 6 to 15 percent. These soils are formed by erosional forces, surface runoff, or natural reworking processes. Colors are typically yellowish-brown. The high erosion hazard, low capacity for available moisture, and thin root zone make this soil unsuited for cultivation. Runoff and permeability are rapid. Soil structure is weak, and the capacity to hold available moisture is low. Natural fertility and the supply of organic matter are low (U.S. Department of Agriculture, 1961). Depth to groundwater is typically 20 feet or greater. Typically, depth to bedrock is approximately 1.5 feet or greater.

1.3 Scope of Work

The scope of work for activities associated with the SI at the DEH Compound, as specified in the statement of work (USACE, 1998), includes the following tasks:

- Develop the SFSP attachment.
- Develop the SSHP attachment.
- Collect 7 surface soil, 14 subsurface soil, 4 sediment, 4 surface water, and 18 groundwater samples (14 direct-push samples and 4 monitoring well samples) to determine if potential site-specific chemicals (PSSC) are present at the DEH Compound and provide data to determine future planned corrective measures and closure activities.

Upon completion of the field activities and sample analyses, draft and final summary reports will be prepared in accordance with current U.S. Environmental Protection Agency (EPA) Region IV and Alabama Department of Environmental Management (ADEM) requirements.

2.0 Summary of Existing Environmental Studies

ESE conducted an environmental baseline survey (EBS) to document current environmental conditions of all FTMC property (ESE, 1998). The study identified sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance on fast track cleanup at closing installations. The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria.

1. Areas where no storage, release, or disposal (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action underway.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the CERFA (CERFA-Public Law 102-426) protocols and DOD policy regarding contamination assessment. Record searches and reviews were performed on all reasonably available documents from FTMC, ADEM, EPA Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and Resource Conservation and Recovery Act-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, visual site inspections were conducted to verify conditions of specific property parcels.

Former PCP Dip Tank. The former PCP dip tank (Parcel 64[7]) was located in the southwestern section of the DEH Compound (Figure 1-2). The dip tank was constructed of steel with two doors located at the top of the tank approximately level with the ground surface. The dip tank was installed in the mid 1960s and had a 2,500-gallon capacity. The dip tank was used

to store water, diesel fuel, and the wood preservative PCP, a listed hazardous waste to treat lumber. Dipping operations stopped at this site in 1981 (ESE, 1998).

In May 1986, the PCP tank was emptied and cleaned. The contents were pumped into 55-gallon drums, and the tank later filled with rain water. This rain water was sampled and the results indicated that the contents were nonhazardous. Because the liquid was nonhazardous, it was allowed to be discharged to the sanitary sewer. A surface soil sample was also collected from the immediate area around the tank and found to be nonhazardous as well (ESE, 1998).

The U.S. Army Environmental Hygiene Agency (USAEHA) indicated that the inspection of the tank, prior to cleaning, revealed that it had probably leaked in the past. In 1986, USAEHA recommended that the drums be resampled with lower detection limits for dioxin before the PCP tank was removed. If the results were positive, the side walls would also be resampled for dioxin (ESE, 1998). To date, dioxin analytical data have not been found.

The PCP tank was removed for proper disposal in October 1987. A record of further sampling was not indicated in the report. The concrete slab was broken up; the rubble and surrounding soil were removed with a back hoe. Soil samples were collected and analyzed. These samples were found to be nonhazardous, and the excavation was backfilled with clean soil. Groundwater samples were not collected in this area (ESE, 1998). Analytical results from previous sampling activities at the former PCP dip tank have not been found.

Building 214. The DEH wash rack, Building 214 (Parcel No. 64 [7]), is located within the DEH Compound inside the chainlink fence and next to the vehicle wash rack (Figure 1-2). The wash rack, Building 214, was built in 1965 and has a baffle-type OWS that was reportedly inoperable. As a consequence, the bypass valve was closed off permanently. This system historically discharged directly into storm water drainage; however, it is not currently in use. The wash rack facility was rebuilt in 1991 and currently has a settling basin attached to a coalescing plate OWS. The new OWS system, located across a man-made drainage feature from the wash rack area, now discharges into the sanitary sewer system. The OWS and the wash rack are connected via a 6-inch underground schedule 80, polyvinyl chloride pipeline, which is partially exposed at ground surface at the drainage ditch area.

Building 208, Herbicide Storage Facility. The former pesticide and herbicide storage facility is located inside Building 208. Building 208 is located in the northern section of the

DEH Compound inside the chainlink fence (Figure 1-2). Building 208 was constructed in 1957 for use as a vehicle storage area. However, the facility was used for pesticide and herbicide storage from 1971 to 1986. The tire repair shop now occupies the part of Building 208 where the former pesticide and herbicide storage facility was originally located. Mixing of pesticides is reported to have occurred at the site. In 1986, pesticide operations were relocated to Building 211. Neither spills nor releases have been documented at Building 208, and evidence of spillage or stressed vegetation was not observed during the visual site inspection by Ecology & Environment (E&E). Sampling has not been conducted at this facility (ESE, 1998).

Building 211, Pesticide Mix/Storage Facility. Building 211 is located in the northeast corner of the DEH Compound (Figure 1-2). The building was constructed in 1960. In 1986, pesticide operations were relocated to Building 211 from Building 208. The building was designed and constructed specifically for storing and mixing pesticides. Building 211 includes a mix-rinse pad, used by tractor-mounted sprayers. The building was originally equipped with a sump to collect rinse water from the covered mix-rinse pad for subsequent carbon filtration. This water was to be discharged to the sanitary sewer system. However, the waste handling system was believed to be performing poorly, so the floor drain was filled with cement and the mix-rinse pad is no longer used (ESE, 1998). Information on current rinse-washer disposal procedures has not been made available to IT.

The quantity of pesticides stored in Building 211 normally reflect the expected application requirements for pest control in various building, including mess halls and housing facilities. The building currently contains approximately 100 gallons of pesticides and herbicides stored in containers capable of holding 5 gallons. The storage area is temperature-controlled and has an impermeable floor and secondary containment within the building. Pesticides historically stored in this building include Dursban, Xtrban Roach Concentrate, Diazinon 4E, Sevin, Malathion, Killmaster II, and Prohibit Insecticide. Chemicals currently stored in Building 211 include Dursban LO, Roundup, Orthene, 2-4D, and Award (ESE, 1998).

In 1985, soil samples were collected for pesticides and other semivolatiles analysis. The results indicated trace concentrations of chlordane metabolites, methoxychlor, hexachlorobenzene, 4-4'-dichlorodiphenyltrichloroethane, and dieldrin (Table 2-1). The levels of these chemicals were determined not to exceed levels that would be harmful to human health and the environment. Due to the long history of the facility, it was determined that additional investigation was needed at this site (ESE, 1998).

Table 2-1

Summary of Soil Sample Analytical Results
1985
DEH Compound
Herbicide/Pesticide Mixing Area, Building 211
Fort McClellan, Calhoun County, Alabama

Constituent	Detection Level (ppm)	Sample Number	
		008 (ppm)	009 (ppm)
beta-BHC	0.010	*	*
delta-BHC	0.010	*	*
Lindane	0.004	ND	ND
O,P'-DDD	0.020	*	*
P,P'-DDD	0.016	*	*
P,P'-DDE	0.016	*	*
O,P'-DDE	0.020	*	*
O,P'-DDT	0.020	*	*
P,P'-DDT	0.030	1.75	1.02
Aldrin	0.021	*	*
Dieldrin	0.012	0.32	0.13
Endrin	0.021	ND	ND
Chlordane	0.060	ND	ND
Metabolized chlordane/ total constituents	0.060	19	5.02
Heptachlor	0.003	+	ND
Heptachlor epoxide	0.008	*	*
cis-Chlordane	0.008	+	+
trans-Chlordane	0.008	+	+
Oxychlordane	0.008	*	*
Methoxychlor	0.08	0	1.16
Mirex ^R	0.020	ND	ND
Toxaphene	0.800	ND	ND
PCB-1242	0.200	*	*
PCB-1246	0.200	*	*
PCB-1254	0.200	*	*
PCB-1260	0.200	ND	ND
Chlorpyrifos	0.200	ND	ND
Ronnel	0.010	ND	ND
Diazinon	0.052	ND	ND
Methyl parathion	0.03	ND	ND
Parathion	0.020	ND	ND
Malathion	0.010	ND	ND
2,4-D (as methyl ester)	0.010	**	**
2,4,5-T (as methyl ester)	0.004	**	**
Silvex (as methyl ester)	0.004	**	**
HCB	0.003	ND	0.03

Source: Weston, 1990, Enhanced Preliminary Assessment, Fort McClellan, Alabama.

ND - Not detected.

* Unable to effect separation of any low levels of this compound due to the high levels of chlordane constituents.

** Not screened for in this sample. Unable to overcome high buffering capacity of the soil using present methods.

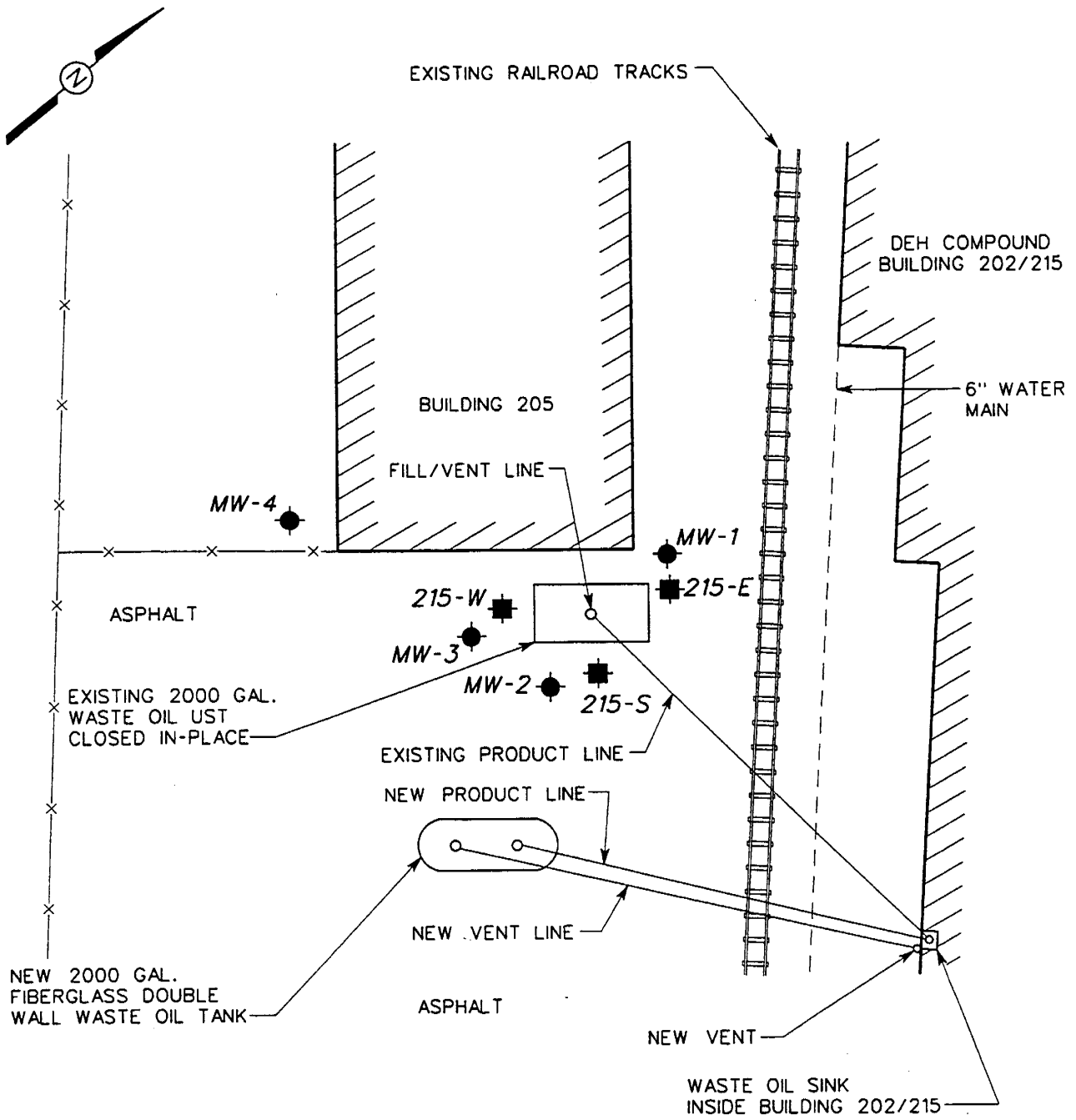
+ Included in metabolized chlordane/total constituents.

Building 202/215. Building 202/215 (Parcel No. 1[7]) is located in the central part of the Main Post (Figure 1-2). In 1982, a steel 2,000-gallon underground storage tank (UST) was installed at the site to store waste oil. The 2,000-gallon UST was located approximately 50 feet southwest of the DEH Compound next to Building 205 (Figure 2-1). On April 26, 1994, three soil borings (215-E, 215-S, and 215-W) were advanced on the accessible sides of the steel 2,000-gallon UST using a hollow-stem auger rig. Soil samples were collected at two intervals (7.5 feet below land surface [bls] and 10 feet bls) from borings 215S and 215-W. One soil sample was collected at soil boring location 215-E at 10 feet bls. Soil samples from each boring were analyzed for total petroleum hydrocarbons (TPH) and lead. High concentrations of TPH were detected from the soil samples collected from the south (215-S) and west (215-W) side of the UST excavation. TPH was detected at concentrations of 3,700 milligrams per kilogram (mg/kg) and 2,500 mg/kg in the soil samples collected from the south (sample 215-S) and west (sample 215-W) sides, respectively, of the tank excavation. The borings were advanced to approximately 10 to 13.5 feet bls. Weathered shale bedrock was encountered at approximately 7 to 8 feet bls in each boring. Soil sample analytical results are presented in Table 2-2. Soil boring locations with TPH and lead concentrations are shown on Figure 2-2.

On May 13, 1994, the steel 2,000-gallon UST was closed in place and filled with a concrete slurry. The 2,000-gallon UST was located adjacent to the wall footings of Building 215; therefore, in-place abandonment was chosen as the closure option. The tank was later replaced with a new 2,500-gallon fiberglass UST approximately 30 feet south of the steel 2,000-gallon UST.

On May 18, 1994, four monitoring wells (MW-1, MW-2, MW-3, and MW-4) were installed at the site. Monitoring wells MW-1, MW-2, and MW-3 were installed adjacent to soil boring locations 215-E, 215-S, and 215-W, respectively. The monitoring wells were advanced to 17 feet bls. MW-4 was installed on the west side of Building 205 (Figure 2-1). Groundwater samples were collected from the four monitoring wells on October 14, 1994 and analyzed for volatile organic compounds (VOC), total lead, and polynuclear aromatic hydrocarbons (PAH). VOCs, PAHs, and lead were not detected in the four monitoring wells, except for fluorene in MW-2, MW-3, and MW-4 and benzo(k)fluoranthene in MW-4. Groundwater is at approximately 5 to 8 feet bls based on groundwater data from each monitoring well. The closure report concluded that a petroleum release had occurred on site and that the vertical and horizontal extent of contamination in the soil had not been determined (Braun Intertec Corporation, 1995).

DWG. NO.: ... \774645es.069	INITIATOR: J. TARR	DRAFT. CHCK. BY:	DATE LAST REV.:	STARTING DATE: 06/05/98
PROJ. NO.: 774645	PROJ. MGR.: J. YACOB	ENGR. CHCK. BY: A. MAYILA	DRAWN BY:	DRAWN BY: D. BILLINGSLEY
				10 JUN 98 14:13:00



LEGEND:

- EXISTING BEDROCK MONITORING WELL
- EXISTING SUBSURFACE SOIL SAMPLE
- FENCE
- RAILROAD TRACKS

FIGURE 2-1
SITE MAP
 DIRECTORATE OF ENGINEERING AND HOUSING (DEH) COMPOUND
 BUILDING 202/215
 PARCELS 64(7) AND 1(7)

U. S. ARMY CORPS OF ENGINEERS
 MOBILE DISTRICT
 FORT McCLELLAN
 CALHOUN COUNTY, ALABAMA
 Contract No. DACA21-96-D-0018

SOURCE: BRAUN INTERTEC CORPORATION REPORT
 "UST CLOSURE, SITE ASSESSMENT
 REPORT, BUILDING 215, CALHOUN COUNTY,
 FORT McCLELLAN, ALABAMA" JANUARY 1995.

NOT TO SCALE



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 d:\itvds\div\774645es.069

Table 2-2

**Summary of Soil Sample Analytical Results
April 1994
DEH Compound, Building 202/215, Parcel 1(7)
Fort McClellan, Calhoun County, Alabama**

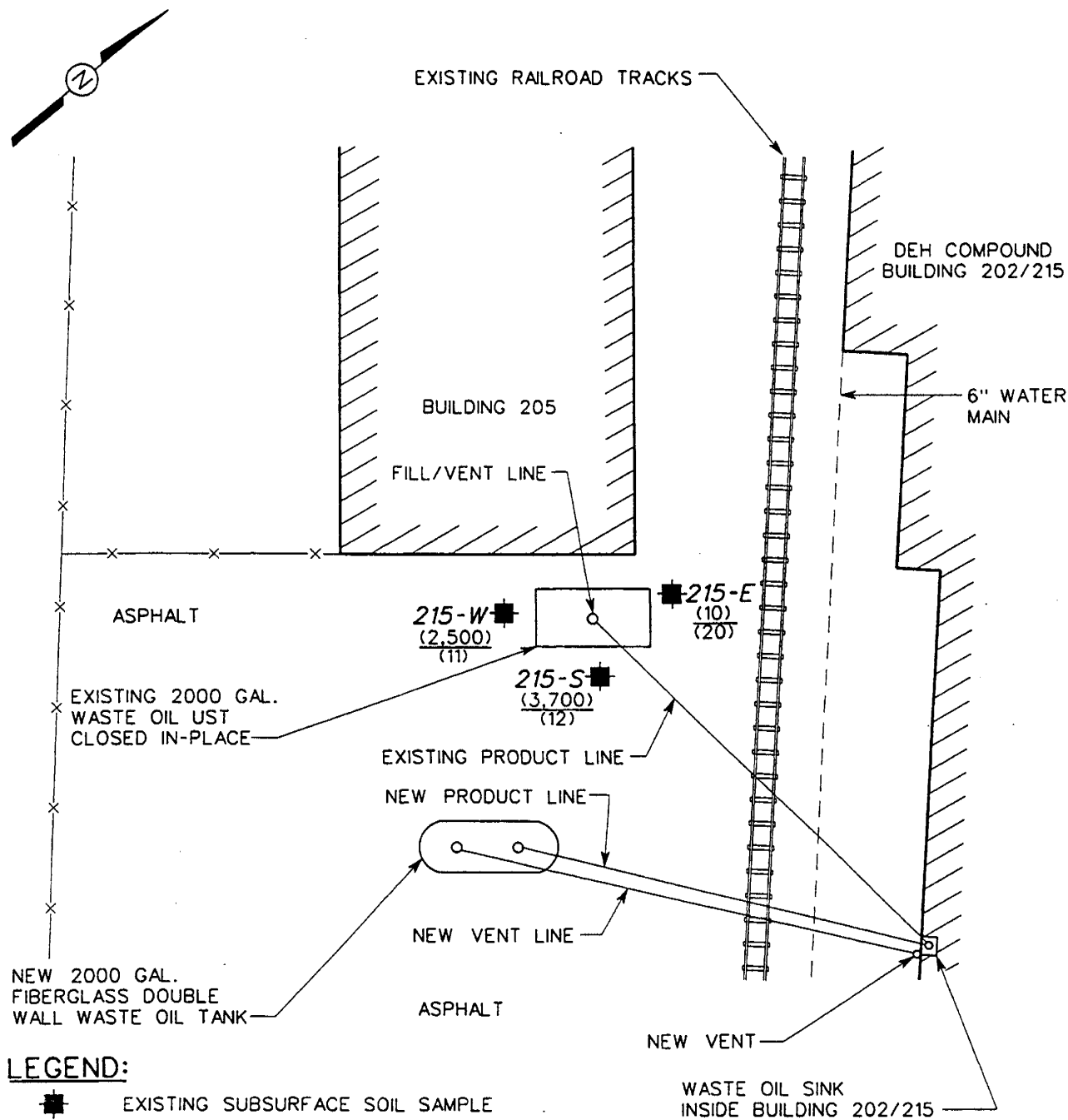
Soil Sample Boring Location	Depth Interval (feet bls)	TRPH Concentration (ppm)	Total Lead Concentration (ppm)
215-E	10	10	20
215-S	7.5	3,700	12
215-S	10	25	20
215-W	7.5	2,500	11
215-W	10	5	18

ppm - Parts per million.

Data from soil samples collected by Braun Intertec Corporation in April 1994.

Source: Braun Intertec Corporation, 1995, *UST Closure, Site Assessment Report, Building 215, Fort McClellan, Calhoun County, Alabama*.

DWG. NO.: 774645es.070	INITIATOR: J. TARR	DRAFT. CHCK. BY: ENGR. CHCK. BY: A. MAYILA	STARTING DATE: 06/05/98	DATE LAST REV.: 10 JUN 98
PROJ. NO.: 774645	PROJ. MGR.: J. YACOB		DRAWN BY: D. BILLINGSLEY	14:15:47



LEGEND:

- EXISTING SUBSURFACE SOIL SAMPLE
- 215-E SOIL SAMPLE DESIGNATION
- mg/L MILLIGRAMS PER LITER (PARTS PER MILLION)
- (10 mg/L) [TPH CONCENTRATION IN SOIL (1994)]
- (20 mg/L) [LEAD CONCENTRATION IN SOIL (1994)]
- x— FENCE
- ||| RAILROAD TRACKS

FIGURE 2-2
TOTAL PETROLEUM HYDROCARBONS (TPH) AND LEAD (Pb) IN SOIL
DIRECTORATE OF ENGINEERING AND HOUSING (DEH) COMPOUND BUILDING 202/215
PARCELS 64(7) AND 1(7)

SOURCE: BRAUN INTERTEC CORPORATION REPORT
 "UST CLOSURE, SITE ASSESSMENT
 REPORT, BUILDING 215, CALHOUN COUNTY,
 FORT McCLELLAN, ALABAMA" JANUARY 1995.

U. S. ARMY CORPS OF ENGINEERS
 MOBILE DISTRICT
 FORT McCLELLAN
 CALHOUN COUNTY, ALABAMA
 Contract No. DACA21-96-D-0018



NOT TO SCALE

3.0 Site-Specific Data Quality Objectives

3.1 Overview

The data quality objective (DQO) process (EPA, 1993) is followed to evaluate data requirements and to support the decision-making process associated with future action at the DEH Compound. The DQO process as applied to the DEH Compound SI is described in more detail in Section 4.3 of the WP (IT, 1998b). Table 3-1 provides a summary of the factors used to determine the sampling quantity and procedures necessary to meet the objectives of the SI and to establish a basis for future action at the site. The intended data users and available data related to the SI at the DEH Compound presented in Table 3-1 have been used to formulate a site-specific conceptual model to develop this SFSP. The conceptual model ensures that the objectives of the SI are met and a basis for future action at the site is established. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work. The program has also been designed to provide defensible information required to confirm or deny the existence and nature of residual chemical contamination in site media.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with USACE-Civil Engineering South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

3.2 Data Users and Available Data

The intended data users and available data related to the SI at the DEH Compound, presented in Table 3-1, have been used to formulate a site-specific conceptual model. This conceptual model was developed to support the development of this SFSP, which is necessary to meet the objectives of these activities and to establish a basis for future action at the site. The data users for information generated during field activities are primarily EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work. The program has also been designed to provide the

Table 3-1

Summary of Data Quality Objectives

DEH Compound

Former PCP Dip Tank, Parcel 64(7); Building 202/215, Parcel 1(7); Building 214, Parcel 64(7)
 Building 211, Parcel 64(7); and Building 208, Parcel 64(7)
 Fort McClellan, Calhoun County, Alabama

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA ADEM USACE DOD IT Corporation Other Contractors Possible future land users	UST Abandonment Soil and Groundwater Sample Data (Braun, 1995)	Contaminant Source Petroleum chemicals and herbicides Migration Pathways Infiltration to subsurface soils, migration and leaching to groundwater. Runoff and erosion to surface water, and possible groundwater discharge to surface water. Dust emissions and volatilization to air	Surface Soil	SI to confirm or deny the presence of contamination in the site media and locate source areas, if present. Obtain sufficient data to support, as appropriate, the following: - Implementing an immediate response. - No further action. - Proceeding with an RI/SA.	Surface Soil TCL-VOCs TCL-SVOCs TAL-Metals Herbicides Pesticides Dioxin ^a	Definitive + CESAS Level B data	7 direct-push locations + QC
			Subsurface Soil		TCL-VOCs TCL-SVOCs TAL-Metals Herbicides Pesticides Dioxin ^a	Definitive + CESAS Level B data	
			Groundwater		TCL-VOCs TCL-SVOCs TAL-metals Herbicides Pesticides	Definitive + CESAS Level B data	
	Environmental Baseline Survey (EBS) (ESE, 1998)	Potential Receptors Groundskeeper, construction worker, recreational site user and future resident.	Surface Water		Groundwater TCL-VOCs TCL-SVOCs TAL-metals Herbicides Pesticides	Definitive + CESAS Level B data	14 direct-push locations + 4 monitoring wells
			Sediment		Surface Water TCL-VOCs TCL-SVOCs TAL-metals Herbicides Pesticides	Definitive + CESAS Level B data	
					Sediment TCL-VOCs TCL-SVOCs TAL-metals Herbicides Pesticides Dioxin	Definitive + CESAS Level B data	
		PSSCs Fuels Fuel components Waste oils Organics Metals Herbicides Pesticides Dioxin			Surface Water TCL-VOCs TCL-SVOCs TAL-metals Herbicides Pesticides	Definitive + CESAS Level B data	4 locations
							4 locations

ADEM - Alabama Department of Environmental Management.

CESAS - Civil Engineering South Atlantic Savannah (U.S. Army Corps of Engineers).

DOD - U.S. Department of Defense.

EPA - U.S. Environmental Protection Agency.

^a Two soil samples will be analyzed for dioxin at direct-push locations GP01 and GP02.

PSSC - Potential site-specific chemical.

QC - Quality control.

RI - Remedial Investigation.

SA - Site assessment.

TCL - Target compound list.

USACE - U.S. Army Corps of Engineers.

VOC - Volatile organic compound.

level of defensible data and information required to confirm or rule out the existence of residual chemical contamination in the site media.

3.3 Conceptual Site Exposure Model

The conceptual site exposure model (CSEM) provides the basis for identifying and evaluating the potential risks to human health in the risk assessment. The CSEM includes the receptors appropriate to all plausible scenarios and the potential exposure pathways. Graphically presenting all possible pathways by which a potential receptor may be exposed, including all sources, release and transport pathways, and exposure routes, facilitates consistent and comprehensive evaluation of risk to human health, and helps to ensure that potential pathways are not overlooked. The elements necessary to construct a complete exposure pathway and develop the CSEM include:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptors
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact with a contaminated source medium.

The DEH Compound consists of several buildings used to support historical and current indoor and outdoor activities. Potential contaminants include a wide variety of petroleum chemicals, insecticides, and herbicides. If they occurred, primary contaminant releases would have been to surface and subsurface soil, and, in some cases, by floor drains to storm sewers, which discharge to Cane Creek. Potential contaminant transport pathways include infiltration to subsurface soil, infiltration and leaching to groundwater, runoff and erosion to Cane Creek, and possibly groundwater discharge to Cane Creek, and dust emissions and volatilization to air.

Plausible receptors under the current site-use scenario include the groundskeeper and construction worker, exposed to soil inside the fence, and the recreational site user, exposed to surface water and sediment in Cane Creek southwest of the site and an unnamed stream northwest of the site. Future plans call for development of the site as a recreational area, including a small lake and a public park (FTMC, 1997).

Future development for residential use, although not currently planned, is possible and would represent a conservative site-use scenario. Plausible receptors in the future include the recreational site user, groundskeeper, construction worker, and resident. It is assumed that groundwater may be developed as a source of potable water. The venison and fish consumption scenarios are excluded due to the lack of substantial fish or venison harvesting environments at this site.

The contaminant release and transport mechanisms, source and exposure media, receptors, and exposure pathways are summarized in Figure 3-1 and Table 3-1.

Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling specific ecological assessment methods, etc) will be addressed in a separate document to be issued as the habitat-specific screening ecological assessment work plan.

3.4 Decision-Making Process, Data Uses, and Needs

The decision-making process consists of a seven-step process that is presented in detail in Section 4.3 of the WP and will be followed during the SI at the DEH Compound. Data uses and needs are summarized in Table 3-1.

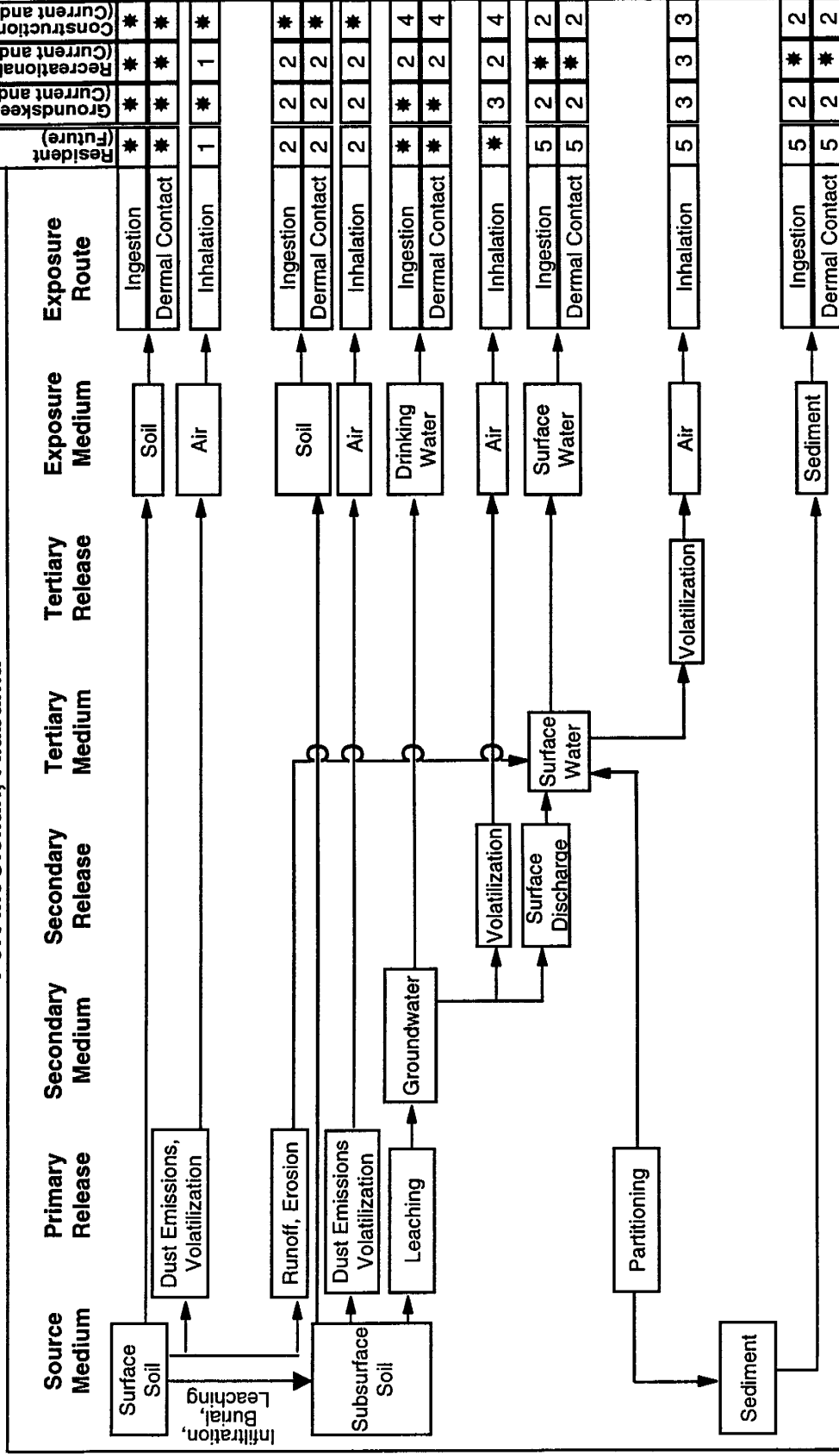
3.4.1 Risk Evaluation

Confirmation of contamination at the DEH Compound will be based upon a comparison of detected site-specific chemicals to site-specific screening levels developed in the WP (IT, 1998b). EPA definitive data with CESAS Level B data packages will be used to achieve detection limits sufficient to determine whether or not the established guidance criteria are exceeded in site media. This definitive data will be adequate for confirming the presence or absence of site contamination and for supporting additional decision-making steps, such as remedial action and risk assessment, if necessary.

3.4.2 Data Types and Quality

Surface and subsurface soil, groundwater, surface water, and sediment will be sampled and analyzed to meet the objectives of the SI at the DEH Compound. Quality assurance/quality control (QA/QC) samples will be collected for all sample types as described in Chapter 4.0 of this SFSP. Samples will be analyzed by EPA-approved SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages.

Figure 3-1
Human Health Conceptual Site Exposure Model
for the Directorate of Engineering and Housing (DEH) Compound, Parcels 64(7) and 1(7)
Fort McClellan, Alabama



* = Complete exposure pathway quantified in SSSL development.

1 = Volatilization from undisturbed surface soil deemed insignificant; soil is likely to be paved or vegetated, reducing dust emissions to insignificant levels; inhalation pathway not quantified.

2 = Incomplete exposure pathway.

3 = Although theoretically complete, this pathway is judged to be insignificant.

4 = Although theoretically complete, these pathways are not quantified for the construction worker because SSSLs developed for the construction worker would be at least as restrictive.

5 = Although theoretically complete, SSSLs for these pathways are developed only for the recreational site user. SSSLs developed for the recreational site user may be used to estimate risk for this receptor.

In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

3.4.3 Precision, Accuracy, and Completeness

Laboratory requirements of precision, accuracy, and completeness for this SI are provided in Chapter 9.0 of the QAP.

4.0 Field Activities

4.1 Utility Clearances

Prior to performing any intrusive sampling, a utility clearance will be performed at all locations where soil and groundwater samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP. The site manager will mark the proposed locations with stakes, coordinate with the installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are cleared, the stakes will be labeled as cleared.

4.2 Environmental Sampling

The environmental sampling program during the SI at the DEH Compound includes the collection of surface soil and subsurface soil, surface water, sediment, and groundwater samples for chemical analysis.

4.2.1 Surface Soil Sampling

Seven surface soil samples will be collected from the DEH Compound to determine if PSSCs are present.

4.2.1.1 Sample Locations and Rationale

The surface soil sampling rationale is presented in Table 4-1. A total of seven surface soil samples will be collected from the DEH Compound. Surface soil samples at the DEH Compound will be collected from the upper 1 foot of the soil at each sampling location. The proposed surface soil sampling locations are presented on Figure 4-1.

4.2.1.2 Sample Collection

Surface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. Seven surface soil samples will be collected using the direct-push methodology as specified in Section 4.7.1.1 of the SAP.

Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. Sample documentation and chain of custody (COC) will be recorded as specified in Section 4.13 of the SAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

Table 4-1

Site Sampling Rationale
DEH Compound
Former PCP Dip Tank, Parcel 64(7); Building 202/215, Parcel 1(7); Building 214, Parcel 64(7);
Building 211, Parcel 64(7); and Building 208, Parcel 64(7)
Fort McClellan, Calhoun County, Alabama

(Page 1 of 2)

Sample Location	Sample Media	Sampling Location Rationale
FTA-64-GP01	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Sampling location to address the 2,500-gallon PCP dip tank. Source area sample to confirm or deny potential contaminants in the vicinity of the removed PCP dip tank.
FTA-64-GP02	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Sampling location to address the 2,500-gallon PCP dip tank. Source area sample to confirm or deny potential contaminants in the vicinity of the removed PCP dip tank.
FTA-64-GP03	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Sampling location to address the Building 214 wash rack area. Sample location represents an area where vehicular fuels could overflow/overspill, collect, and percolate into the substratum.
FTA-64-GP04	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Sampling location to address the absence or presence of potential contaminants from the oil/water separator. Sample location between the drainage ditch and oil water separator.
FTA-64-GP05	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Sampling location in the vicinity of the Building 211 pesticide/herbicide storage area. Sample location represents an area where potential contaminants could collect and percolate into the substratum. The sample location will be placed near doorways and/or in a low-lying area in close proximity to Building 211.
FTA-64-GP06	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Sample location in the vicinity of the former pesticide/herbicide Building 208. Sample location represents an area where potential contaminants could collect and percolate into the substratum. The sample location will be placed near a doorway, and/or in a low-lying area in close proximity to Building 208.
FTA-64-GP07	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Perimeter sampling point located outside the chainlink fence next to Building T-213. Any migration of contaminants from the source areas in question would most likely migrate towards Cane Creek and this sample location.
FTA-64-GP08	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Perimeter sampling point located outside the chainlink fence adjacent to Building 205. Any migration of contaminants from the source areas in question would most likely migrate towards Cane Creek and this sample location.
FTA-64-GP09	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Perimeter sampling point located outside the chainlink fence next to the drum storage area. Sample location represents the most probable source area for contaminant migration from the drum storage area.
FTA-64-GP10	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Samples will be collected from an upgradient location in the grass area approximately 30 feet east of Building 215 to determine whether potential contaminants are from another source upgradient of the site near 15th Street.
FTA-64-GP11	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Samples will be collected from an upgradient location near the drainage ditch outside the chainlink fence to determine whether potential contaminants are from another source upgradient of the site.

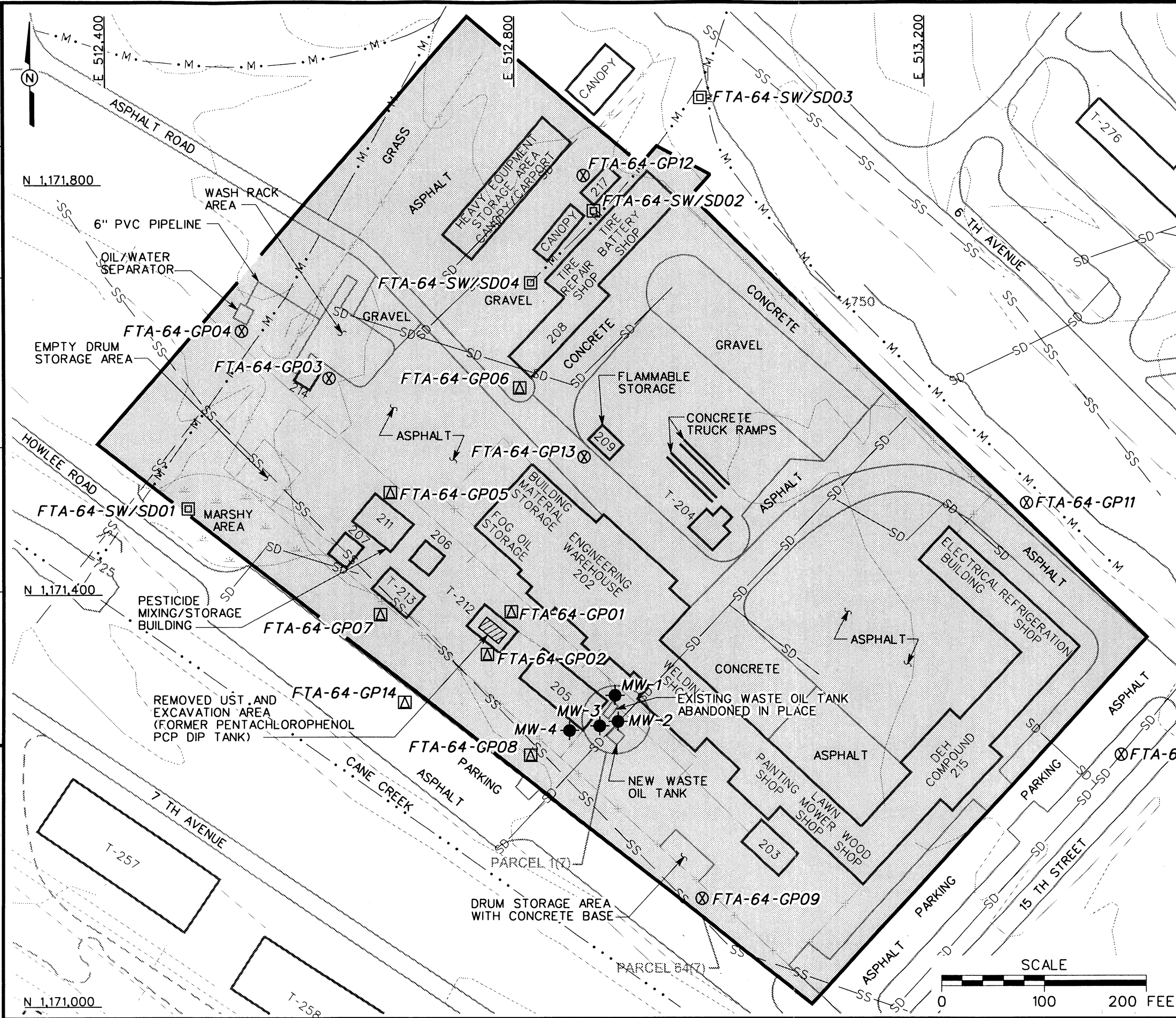
Table 4-1

Site Sampling Rationale
DEH Compound
Former PCP Dip Tank, Parcel 64(7); Building 202/215, Parcel 1(7); Building 214, Parcel 64(7);
Building 211, Parcel 64(7); and Building 208, Parcel 64(7)
Fort McClellan, Calhoun County, Alabama

(Page 2 of 2)

Sample Location	Sample Media	Sampling Location Rationale
FTA-64-GP12	SUBSURFACE SOIL GROUNDWATER	Samples will be collected next to Building 217 approximately 30 feet north of Building 208 the tire and battery repair shop. This area had visible oil staining on the concrete flooring during the site walkovers in April 1998.
FTA-64-GP13	SUBSURFACE SOIL GROUNDWATER	Samples will be collected next to Building 209 to confirm the presence or absence of contaminants in the vicinity of the flammable storage building.
FTA-64-GP14	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Samples will be collected between Building T-212 and Cave Creek to assess possible contaminant migration from the former PCP dip tank towards Cane Creek.
FTA-64-MW01	GROUNDWATER	Sample groundwater from existing bedrock well to confirm or deny the presence of potential contaminants near the abandoned steel 2,000-gallon used oil UST located next to Building 205.
FTA-64-MW02	GROUNDWATER	Sample groundwater from existing bedrock well to confirm or deny the presence of potential contaminants near the abandoned steel 2,000-gallon used oil UST located next to Building 205.
FTA-64-MW03	GROUNDWATER	Sample groundwater from existing bedrock well to confirm or deny the presence of potential contaminants near the abandoned steel 2,000- gallon used oil UST located next to Building 205.
FTA-64-MW04	GROUNDWATER	Sample groundwater from existing bedrock well to confirm or deny the presence of potential contaminants near the abandoned steel 2,000-gallon used oil UST located next to Building 205.
FTA-64-SD01 FTA-64-SW01	SEDIMENT SURFACE WATER	Samples will be collected in the marsh area next to Howlee Road in the eastern section of the DEH Compound. Evidence of contaminant mobility at any point within the site would most likely be integrated at this location. Sample location is a potential downgradient sink for the contaminants from the site.
FTA-64-SD02 FTA-64-SW02	SEDIMENT SURFACE WATER	Samples will be collected from the drainage ditch next to Building 217, just north of Building 208. Soil staining observed at Building 217 during site walkovers in April 1998. Potential source area for contaminants.
FTA-64-SD03 FTA-64-SW03	SEDIMENT SURFACE WATER	Samples will be collected at the intersection of the drainage ditch that borders the DEH Compound to the northeast.
FTA-64-SD04 FTA-64-SW04	SEDIMENT SURFACE WATER	Samples will be collected at the confluence of the drainage ditch located behind Building 208. Sampling location represents a lower elevation area and any contaminants from the Building 217 would likely be integrated at this location.

Notes: Subsurface soil sample depths are approximated. Actual sample depth selected for analysis will be at the discretion of the on-site geologist and will be based on field observation.



LEGEND

- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- BUILDING
- TOPOGRAPHIC CONTOURS
- TREES / TREELINE
- MARSH / WETLANDS
- PARCEL BOUNDARY
- BRIDGE
- CULVERT WITH HEADWALL
- SURFACE DRAINAGE / CREEK
- MANMADE SURFACE DRAINAGE FEATURE
- FENCE
- RAILROAD
- SANITARY SEWER LINE
- STORM DRAINAGE LINE
- EXISTING BEDROCK MONITORING WELL
- PROPOSED SURFACE WATER/SEDIMENT SAMPLE
- PROPOSED GROUNDWATER, SURFACE AND SUBSURFACE SOIL SAMPLE
- PROPOSED GROUNDWATER/SUBSURFACE SOIL SAMPLE

NOTES

1. ALL AREAS ARE ASSUMED GRASS UNLESS OTHERWISE NOTED.
2. MONITORING WELL LOCATIONS ARE NOT CONFIRMED.

FIGURE 4-1
PROPOSED SAMPLE LOCATIONS
DIRECTORATE OF ENGINEERING AND
HOUSING (DEH) COMPOUND
PARCELS 64(7) AND 1(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018



Table 4-2

Surface and Subsurface Soil Sample Designations and QA/QC Sample Quantities
DEH Compound
Former PCP Dip Tank, Parcel 64(7); Building 202/215, Parcel 1(7); Building 214, Parcel 64(7);
Building 211, Parcel 64(7); and Building 208, Parcel 64(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite ^a
			Field Duplicates	Field Splits	MS/MSD	
FTA-64-GP01	FTA-64-GP01-SS-EA0001-REG	0-1.0 ^b				TCL VOCs, TCL SVOCs, Dioxin ^c , TAL Metals
FTA-64-GP02	FTA-64-GP01-DS-EA0002-REG					
	FTA-64-GP02-SS-EA0003-REG	0-1.0 ^b				TCL VOCs, TCL SVOCs, Dioxin ^c , TAL Metals
	FTA-64-GP02-DS-EA0004-REG					
FTA-64-GP03	FTA-64-GP03-DS-EA0005-REG	^b	FTA-64-GP03-DS-EA0006-FD	FTA-64-GP03-DS-EA0007-FS		TCL VOCs, TCL SVOCs, TAL Metals
FTA-64-GP04	FTA-64-GP04-DS-EA0008-REG	^b				TCL VOCs, TCL SVOCs, TAL Metals
FTA-64-GP05	FTA-64-GP05-SS-EA0009-REG	0-1.0 ^b	FTA-64-GP05-SS-EA1010-FD			TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, TAL Metals
	FTA-64-GP05-DS-EA0011-REG					
FTA-64-GP06	FTA-64-GP06-SS-EA0012-REG	0-1.0 ^b			FTA-64-GP06-DS-EA0013-MS	TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, TAL Metals
	FTA-64-GP06-DS-EA0013-REG				FTA-64-GP06-DS-EA0013-MSD	TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, TAL Metals
FTA-64-GP07	FTA-64-GP07-SS-EA0014-REG	0-1.0 ^b				TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, TAL Metals
	FTA-64-GP07-DS-EA0015-REG					
FTA-64-GP08	FTA-64-GP08-SS-EA0016-REG	0-1.0 ^b				TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, TAL Metals
	FTA-64-GP08-DS-EA0017-REG					
FTA-64-GP09	FTA-64-GP09-DS-EA0018-REG	^b				TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, TAL Metals
FTA-64-GP10	FTA-64-GP10-DS-EA0019-REG	^b				TCL VOCs, TCL SVOCs, TAL Metals
FTA-64-GP11	FTA-64-GP11-DS-EA0020-REG	^b				TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, TAL Metals
FTA-64-GP12	FTA-64-GP12-DS-EA0021-REG	^b				TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, TAL Metals
FTA-64-GP13	FTA-64-GP13-DS-EA0022-REG	^b				TCL VOCs, TCL SVOCs, TAL Metals
FTA-64-GP14	FTA-64-GP14-SS-EA0023-REG	0-1.0 ^b				TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, TAL Metals
	FTA-64-GP14-DS-EA0024-REG					

^a Surface and subsurface soils from direct-push locations: GP05, GP06, GP07, GP08, GP09, GP12, and GP14 will be analyzed for CI pesticides, OP pesticides, and CI herbicides in addition to TCL VOCs, TCL SVOCs, and TAL metals. All other locations will be analyzed for VOCs, SVOCs, and metals only.

^b Actual sample depth selected for analysis will be at the discretion of the on-site geologist and will be based on field observation.

^c Two surface soil and two subsurface soil samples will be analyzed for dioxin at sample locations FTA-64-GP01 and FTA-64-GP02.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

MS/MSD - Matrix spike/matrix spike duplicate.

CI - Chlorinated.

TCL - Target compound list.

OP - Organophosphorus.

VOC - Volatile organic compound.

TAL - Target analyte list.

4.2.2 Subsurface Soil Sampling

Fourteen subsurface soil samples will be collected from the DEH Compound to determine if PSSCs are present.

4.2.2.1 Sample Locations and Rationale

Subsurface soil sampling rationale is presented in Table 4-1. A total of 14 subsurface soil samples will be collected from the DEH Compound. The proposed subsurface soil sampling locations are presented on Figure 4-1.

4.2.2.2 Sample Collection

Subsurface soil samples will be collected during the advancement of direct-push rods using the methodology specified in Sections 4.7.1.1 and 4.9.1.1 of the SAP. Subsurface soil samples will be continuously collected for the first 12 feet or until either groundwater or until refusal is reached, whichever occurs first. Samples from the entire length of the boring will be field screened using a photoionization detector (PID). The soil sample from each boring exhibiting the highest reading on a PID will be sent to the laboratory for chemical analysis. The soil sample at the soil-groundwater interface, if encountered, will be submitted to the laboratory for chemical analysis if PID readings exceeding background level (ambient air) are not detected. If water is not reached, the deepest interval will be submitted. Sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2.

Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP.

Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Chapter 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.3 Groundwater Sampling

Eighteen groundwater samples will be collected from the DEH Compound to determine if PSSCs are present.

4.2.3.1 Sample Locations and Rationale

Groundwater sampling rationale is presented in Table 4-1. A total of 18 groundwater samples will be collected from the DEH Compound. Fourteen groundwater samples will be collected

from direct-push locations and four existing monitoring wells will be sampled for chemical analysis. The proposed groundwater sampling locations are presented on Figure 4-1.

4.2.3.2 Direct-Push Groundwater Sample Collection

Direct-push groundwater samples will be collected from the same locations as the soil samples (Figure 4-1). Sample collection will be performed as outlined in Section 4.7.1.1 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Chapter 5.0, Table 5-1 of the QAP.

4.2.3.3 Monitoring Well Groundwater Sample Collection

Prior to sampling bedrock wells, static water levels will be measured from the available wells at the site to define the groundwater flow in the bedrock aquifer. Water level measurements will be performed as outlined in Section 4.18 of the SAP. Groundwater samples will be collected from the existing monitoring wells (MW-1, MW-2, MW-3, and MW-4) for the parameters listed in Table 4-3. Monitoring well locations are presented on Figure 4-1. Groundwater sample collection will be performed as outlined in Section 4.9.1.4 of the SAP.

Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Chapter 5.0, Table 5-1 of the QAP.

4.2.4 Surface Water Sampling

Four surface water samples will be collected to determine if PSSCs are present.

4.2.4.1 Sample Locations and Rationale

Surface water sampling rationale is presented in Table 4-1. Four surface water samples will be collected from surface drainage ditches that border the DEH Compound. Figure 4-1 shows the proposed surface water sample locations.

4.2.4.2 Sample Collection

Four surface water samples will be collected in areas where surface water runoff is most likely to occur. In the event that the drainage ditches are dry, surface water samples will be collected following a rain event. Surface water sample designations, depths, and required QA/QC sample quantities are listed in Table 4-4. Surface water samples will be collected in accordance with the procedures specified in Section 4.9.1.3 of the SAP. Sample documentation and COC will be

Table 4-3

Groundwater Sample Designations and QA/QC Sample Quantities
DEH Compound
Former PCP Dip Tank, Parcel 64(7); Building 202/215, Parcel 1(7); Building 214, Parcel 64(7);
Building 211, Parcel 64(7); and Building 208, Parcel 64(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite *
			Field Duplicates	Field Splits	MS/MSD	
FTA-64-GP01	FTA-64-GP01-GW-EA3001-REG	Water Table				TCL VOCs, TCL SVOCs, TAL Metals
FTA-64-GP02	FTA-64-GP02-GW-EA3002-REG	Water Table	FTA-64-GP02-GW-EA3003-FD			TCL VOCs, TCL SVOCs, TAL Metals
FTA-64-GP03	FTA-64-GP03-GW-EA3005-REG	Water Table				TCL VOCs, TCL SVOCs, TAL Metals
FTA-64-GP04	FTA-64-GP04-GW-EA3006-REG	Water Table				TCL VOCs, TCL SVOCs, TAL Metals
FTA-64-GP05	FTA-64-GP05-GW-EA3007-REG	Water Table	FTA-64-GP05-GW-EA3008-FD	FTA-64-GP05-GW-EA3009-FS		TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, TAL Metals
FTA-64-GP06	FTA-64-GP06-GW-EA3010-REG	Water Table			FTA-64-GP06-GW-EA3010-MS	TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, TAL Metals
FTA-64-GP07	FTA-64-GP07-GW-EA3011-REG	Water Table			FTA-64-GP08-GW-EA3010-MSD	TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, TAL Metals
FTA-64-GP08	FTA-64-GP08-GW-EA3012-REG	Water Table				TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, TAL Metals
FTA-64-GP09	FTA-64-GP09-GW-EA3013-REG	Water Table				TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, TAL Metals
FTA-64-GP10	FTA-64-GP10-GW-EA3014-REG	Water Table				TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, TAL Metals
FTA-64-GP11	FTA-64-GP11-GW-EA3015-REG	Water Table				TCL VOCs, TCL SVOCs, TAL Metals
FTA-64-GP12	FTA-64-GP12-GW-EA3016-REG	Water Table				TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, TAL Metals
FTA-64-GP13	FTA-64-GP13-GW-EA3017-REG	Water Table				TCL VOCs, TCL SVOCs, TAL Metals
FTA-64-GP14	FTA-64-GP14-GW-EA3018-REG	Water Table				TCL VOCs, TCL SVOCs, CI Pesticides, OP Pesticides, CI Herbicides, TAL Metals
FTA-64-MW01	FTA-64-MW01-GW-EA3019-REG	7'-17'				TCL VOCs, TCL SVOCs, TAL Metals
FTA-64-MW02	FTA-64-MW02-GW-EA3020-REG	7'-17'				TCL VOCs, TCL SVOCs, TAL Metals
FTA-64-MW03	FTA-64-MW03-GW-EA3021-REG	7'-17'				TCL VOCs, TCL SVOCs, TAL Metals
FTA-64-MW04	FTA-64-MW04-GW-EA3022-REG	6.5'-16.5'				TCL VOCs, TCL SVOCs, TAL Metals

* Groundwater from direct push locations GP05, GP06, GP07, GP08, GP09, and GP12 will be analyzed for CI pesticides, OP pesticides, CI herbicides, TCL VOCs, TCL SVOCs, and TAL metals.
All other locations will be analyzed for VOCs, SVOCs, and metals only.

QA/QC - Quality assurance/quality control
MS/MSD - Matrix spike/matrix spike duplicate
TCL - Target compound list
VOC - Volatile organic compound
SVOC - Semivolatile organic compound
CI - Chlorinated
OP - Organophosphorus
TAL - Target analyte list

Table 4-4

Surface Water and Sediment Sample Designations and QA/QC Sample Quantities
DEH Compound
Former PCP Dip Tank, Parcel 64(7); Building 202/215, Parcel 1(7); Building 214, Parcel 64(7);
Building 211, Parcel 64(7); and Building 208, Parcel 64(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-64-SW/SD01	FTA-64-SW/SD01-SW-EA2001-REG	NA				TCL VOCs, TCL SVOC, CL Pesticides, OP Pesticides, CL Herbicides, TAL Metals.
	FTA-64-SW/SD01-SD-EA1001-REG	0 - 0.5	FTA-64-SW/SD01-SD-EA1002-FD	FTA-64-SW/SD01-SD-EA1003-FS		TCL VOCs, TCL SVOCs, CL Pesticides, OP Pesticides, CL Herbicides, TAL Metals, TOC, and Grain Size
FTA-64-SW/SD02	FTA-64-SW/SD02-SW-EA2002-REG	NA				TCL VOCs, TCL SVOC, CL Pesticides, OP Pesticides, CL Herbicides, TAL Metals.
	FTA-64-SW/SD02-SD-EA1004-REG	0 - 0.5				TCL VOCs, TCL SVOCs, CL Pesticides, OP Pesticides, CL Herbicides, TAL Metals, TOC, and Grain Size
FTA-64-SW/SD03	FTA-64-SW/SD03-SW-EA2003-REG	NA				TCL VOCs, TCL SVOC, CL Pesticides, OP Pesticides, CL Herbicides, TAL Metals.
	FTA-64-SW/SD03-SD-EA1005-REG	0 - 0.5				TCL VOCs, TCL SVOCs, CL Pesticides, OP Pesticides, CL Herbicides, TAL Metals, TOC, and Grain Size
FTA-64-SW/SD04	FTA-64-SW/SD04-SW-EA2004-REG	NA				TCL VOCs, TCL SVOC, CL Pesticides, OP Pesticides, CL Herbicides, TAL Metals.
	FTA-64-SW/SD04-SD-EA1006-REG	0 - 0.5				TCL VOCs, TCL SVOCs, CL Pesticides, OP Pesticides, CL Herbicides, TAL Metals, TOC, and Grain Size

Cl - Chlorinated

MS/MSD - Matrix spike/matrix spike duplicate

OP - Organophosphorus

QA/QC - Quality assurance/quality control

SVOC - Semivolatile organic compound

TAL - Target analyte list

TCL - Target compound list

TOC - Total organic carbon

VOC - Volatile organic compound

recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Chapter 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5.

4.2.5 Sediment Sampling

Four sediment samples will be collected to determine if PSSCs are present.

4.2.5.1 Sample Locations and Rationale

Sediment sampling rationale is presented in Table 4-1. Four sediment samples will be collected from the drainage ditches that border the DEH Compound. The sediment samples will be collected from the same locations as the surface water samples. Figure 4-1 shows the proposed sediment sample locations.

4.2.5.2 Sample Collection

Sediment sample designations and required QA/QC sample quantities are listed in Table 4-4. Sediment samples will be collected in accordance with the procedures specified in Section 4.9.1.2 of the SAP. Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. The sediment will be analyzed for the parameters listed in Section 4.5.

Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Chapter 5.0, Table 5-1 of the QAP.

4.3 Decontamination Requirements

Decontamination will be performed on sampling and nonsampling equipment primarily to ensure that contaminants are not introduced into samples from location to location. Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP. Decontamination of nonsampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP.

4.4 Surveying of Sample Locations

Sampling locations will be marked with pin flags, stakes, and/or flagging and will be surveyed using either global positioning system (GPS) or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the Alabama State Plane Coordinate System, 1983 North American Datum (NAD83). Elevations

Alabama State Plane Coordinate System, 1983 North American Datum (NAD83). Elevations will be referenced to the National Geodetic Vertical Datum of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Horizontal coordinates for soil, sediment, and surface water locations will be recorded using a GPS to provide accuracy within 1 meter. Because of the need to use temporary wells to determine water levels, a higher level of accuracy is required. Temporary wells will be surveyed to an accuracy of 0.1 foot for horizontal coordinates and 0.01 foot for elevations, using survey-grade GPS techniques and/or conventional civil survey techniques, as required. Permanent monitoring well locations will be surveyed by a registered professional land surveyor to provide the required accuracy of 0.1 foot for horizontal coordinates and 0.01 foot for elevations.

Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.

4.5 Analytical Program

Samples collected at locations specified in Chapter 4.0 will be analyzed for various physical and chemical properties. The on-site sample coordinator will provide sampling containers and preservatives, and coordinate sampling procedures to the field sampling crews in accordance with Table 5-1 in the QAP. The specific suite of analyses to be performed is based on the PSSCs present historically at the site and EPA, ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the DEH Compound consist of the following list of parameters:

- Organophosphorus Pesticides – Method 8141A
- Target Compound List (TCL) VOCs – Method 5035/8260B
- TCL Semivolatile Organic Compounds – Method 8270C
- Target Analyte List Metals – Method 6010B/7000
- Total organic carbon – Method 9060 (sediment only)
- Grain size –American Society for Testing and Materials D421/D422 (sediment only)

- Chlorinated Pesticides – Method 8081A
- Dioxin – Method 8290.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-5 in this SSFP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using CLP-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

4.6 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping will follow the procedures as specified in Section 4.13.2 of the SAP. Completed analysis request/COC records will be secured and included with each shipment of coolers to:

Sample Receiving
Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Telephone: (423) 588-6401

Split samples collected for the USACE laboratory will be shipped to the following address:

Sample Receiving
USACE South Atlantic Division Laboratory
611 South Cobb Drive-3112
Marietta, Georgia 30060
Telephone: (770) 919-5270.

4.7 Investigation-Derived Waste Management

Management and disposal of the investigation-derived wastes (IDW) will follow procedures and requirements as described in Section 4.11 and Appendix D of the SAP. The IDW expected to be generated at the DEH Compound will include decontamination fluids and disposable personal protective equipment. The IDW will be staged in the fenced area surrounding Buildings 335 and 336 while awaiting final disposal.

Table 4-5

**Analytical Samples
DEH Compound**
**Former PCP Dip Tank, Parcel 64(7); Building 202/215, Parcel 1(7); Building 214, Parcel 64(7);
Building 211, Parcel 64(7), and Building 208, Parcel 64(7)
Fort McClellan, Calhoun County, Alabama**

Parameters				Analysis		Sample Matrix	TAT Needed	Field Samples ^a			QA/QC Samples ^b					Quanterra	
				Method				No. of Points	No. of Events	No. of Samples	Field Dups (10%)	Spits w/ QA Lab (5%)	MS/MSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)	Total No. Analysis	QA Lab Total No. Analysis
DEH Compound - Parcels 64(7), 1(7): 22 water: 14 direct push and 4 monitoring wells, 4 surface water, 25 soil: 7 surface, 14 subsurface soil, 4 sediment																	
TCL VOCs				8260B	water	normal		22	1	22	2	1	1	5	1	32	2
TCL SVOCs				8270C	water	normal		22	1	22	2	1	1		1	27	2
Tot TAL Metals				6010B/7000	water	normal		22	1	22	2	1	1	1	1	27	2
Cl Pesticides				8081A	water	normal		7	1	7	1	1	1	1	1	11	1
OP Pesticides				8141A	water	normal		7	1	7	1	1	1	1	1	11	1
Cl Herbicides				8151	water	normal		7	1	7	1	1	1	1	1	11	1
TCL VOCs				8260B	soil	normal		25	1	25	2	1	1	1	1	30	2
TCL SVOCs				8270C	soil	normal		25	1	25	2	1	1	1	1	30	2
TAL Metals				6010B/7000	soil	normal		25	1	25	2	1	1	1	1	30	2
Cl Pesticides				8081A	soil	normal		10	1	10	1	1	1	1	1	14	1
OP Pesticides				8141A	soil	normal		10	1	10	1	1	1	1	1	14	1
Cl Herbicides				8151	soil	normal		10	1	10	1	1	1	1	1	14	1
Dioxin				8290	soil	normal		4	1	4					4	0	
Tot Org Carb				9060	sediment	normal		4	1	4					4	0	
Grain Size				ASTM	sediment	normal		4	1	4					4	0	
DEH Compound Total:											18	12	12	5	12	263	18

^a Surface and subsurface soils from direct push locations GP05, GP06, GP07, GP08, GP09, and GP12 samples and the four surface water and sediment locations will be analyzed for Cl pesticides, OP pesticides, and Cl herbicides in addition to TCL VOCs, TCL SVOCs, and TAL metals. All other locations will be analyzed for VOCs, SVOCs, and metals only.

^b Field duplicate, QA split, and MS/MSD samples were calculated as a percentage of the field samples collected per site and were rounded up to the nearest whole number. Trip blank samples will be collected in association with water matrix samples for VOC analysis only. Assumed four field samples per day to estimate trip blanks. Equipment blanks will be collected once per event whenever sampling equipment is field decontaminated and re-used. They will be repeated weekly for sampling events that are anticipated to last more than 1 week. Assumed 20 field samples will be collected per week to estimate number of equipment blanks.

5.0 Project Schedule

The project schedule for the SI activities will be provided by the IT project manager to the Base Closure Team on a monthly basis.

6.0 References

Braun Intertec Corporation, 1995, *UST Closure, Site Assessment Report, Fort McClellan, Building 215, Calhoun County, Alabama*, January.

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U.S. Environmental Protection Agency (EPA), 1993, *Data Quality Objectives Process for Superfund, Interim Final Guidance*, EPA 540-R-93-071, September.

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Site Investigation
Final
Site-Specific Field Sampling Plan Attachment
for the Motor Pool Area 3100, 23rd Street
Parcels 147(7), 72(7), 27(7), and 28(7)

Fort McClellan
Calhoun County, Alabama

Prepared for:

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Revision 1

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List of Acronyms

ADEM	Alabama Department of Environmental Management
bgs	below ground surface
Braun	Braun Intertec Corporation
CLP	Contract Laboratory Program
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
COC	chain of custody
COPC	chemical(s) of potential concern
CSEM	conceptual site exposure model
DOD	U.S. Department of Defense
DQO	data quality objective
EBS	environmental baseline survey
EPA	U.S. Environmental Protection Agency
ESE	Environmental Science and Engineering, Inc.
FTMC	Fort McClellan
GPS	global positioning system
IDW	investigation-derived waste
IT	IT Corporation
OWS	oil/water separator
PID	photoionization detector
PSSC	potential site-specific chemical
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
SAP	installation-wide sampling and analysis plan
SFSP	site-specific field sampling plan
SHP	installation-wide safety and health plan
SI	site investigation
SSHP	site-specific safety and health plan
TCL	target compound list
TPH	total petroleum hydrocarbon
USACE	U.S. Army Corps of Engineers
UST	underground storage tank
WMP	waste management plan
WP	installation-wide work plan

Executive Summary

This site-specific field sampling plan attachment to the installation-wide sampling and analysis plan (SAP) (IT Corporation [IT], 1998a) for the Motor Pool Area 3100, 23rd Street, at Fort McClellan, Calhoun County, Alabama, will be used in conjunction with the site-specific safety and health plan (SSHP), and the installation-wide work plan (IT, 1998b), waste management plan, the habitat-specific screening ecological risk assessment work plan, and the SAP. The SAP includes the installation-wide safety and health plan and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

Motor Pool Area 3100, Parcel 147(7) is located on 23rd Street and is currently an active motor pool. The site covers approximately 4 acres. The motor pool contains two wash racks (Parcel 72[7]), an oil/water separator (OWS), facilities for large vehicle maintenance, a fuel pump island, a vehicle maintenance ramp (grease rack) and a large parking/staging area for military vehicles. Three active USTs are located at this site; two 10,000-gallon diesel tanks (Parcel 27[7]) and a 2,000-gallon waste oil tank (Parcel 28[7]). The 2,000-gallon waste oil UST located at the grease rack (3148) was closed in place (abandoned) and replaced in 1994 by a 2,000-gallon UST (Environmental Science and Engineering, Inc. [ESE], 1998).

The motor pool wash racks (Facilities 3146 and 3147) were built in the 1950s and originally had a baffle-type OWS. These facilities were rebuilt in 1991 and now have a settling basin attached to a coalescing plate OWS which discharges to the sanitary sewer system (ESE, 1998).

The Motor Pool Area 3100, 23rd Street, Parcels 147(7), 72(7), 27(7), and 28(7) falls within the "Possible Explosive Ordnance Impact Area" shown on Plate 10 of the FTMC Archive Search Report, Maps (USACE, 1998a). Therefore, IT will conduct unexploded ordnance (UXO) avoidance activities, including surface sweeps and downhole surveys of soil borings.

Specifically, IT will collect 8 surface soil samples, 15 subsurface soil samples, 9 groundwater samples, 2 surface water samples, 2 sediment samples and 2 depositional soil samples at this site. Potential contaminant sources at the Motor Pool Area 3100, 23rd Street, include petroleum products (e.g., gasoline, diesel, heating oil, waste oil, and lubricants), solvents, and metals. Chemical analyses of the samples collected during the field program will include volatile organic compounds (VOC), semivolatile organic compounds (SVOC), and metals. Additionally, sediment samples will be analyzed for total organic carbon and grain size. Results from these

analyses will be compared with site-specific screening levels specified in the installation-wide work plan (WP) and regulatory agency guidelines.

1.0 Project Description

1.1 Introduction

The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of Motor Pool Area 3100, 23rd Street, under Delivery Order CK005, Contract No. DACA21-96-D-0018.

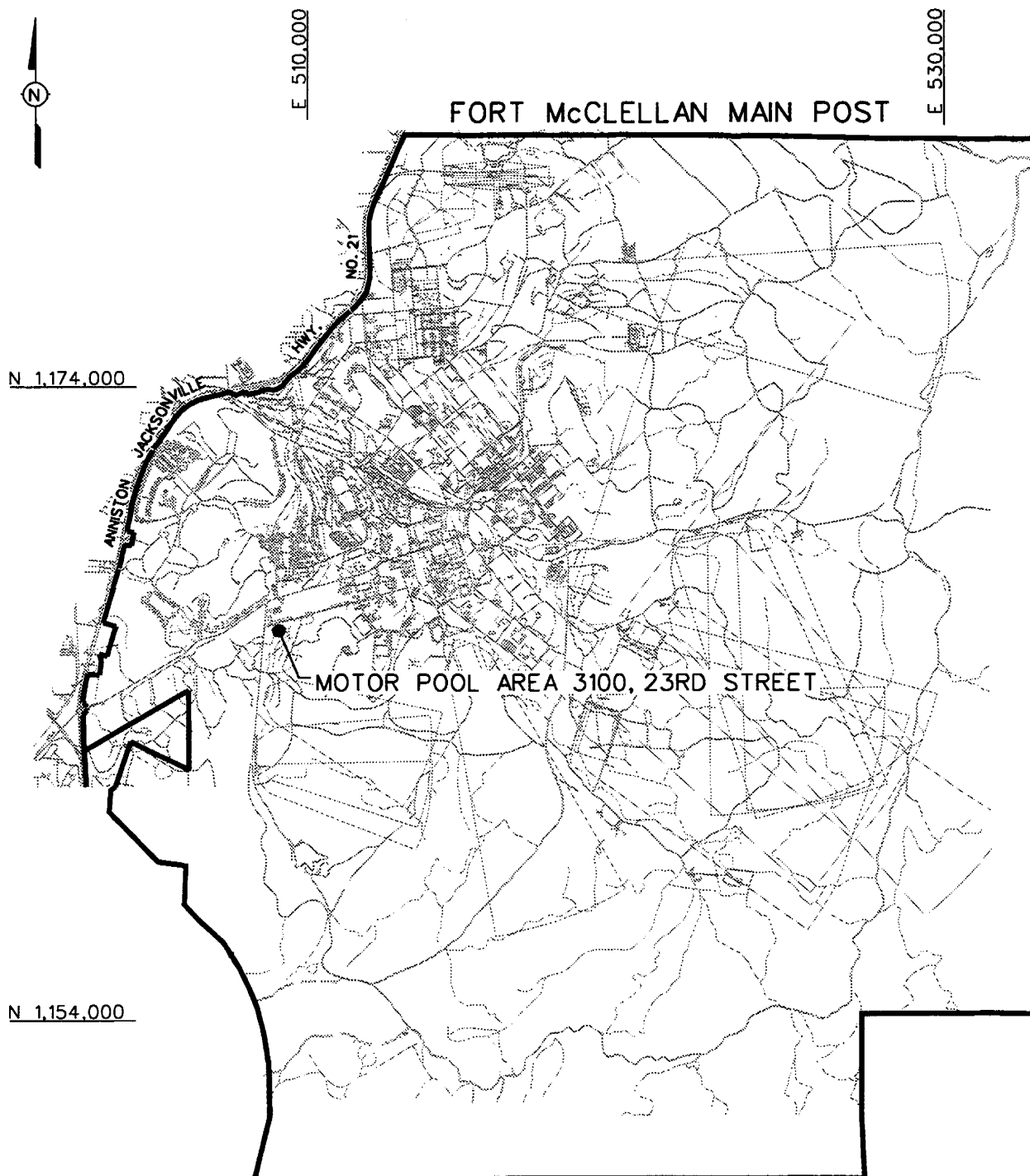
This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for FTMC, Calhoun County, Alabama, has been prepared to provide technical guidance for sample collection and analysis at Motor Pool Area 3100, 23rd Street, Parcels 147(7), 72(7), 27(7) and 28(7) (Figure 1-1). The SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for Motor Pool Area 3100, 23rd Street, and the installation-wide work plan (WP) (IT, 1998b), the habitat-specific screening ecological risk assessment work plan, and SAP. The SAP includes the installation-wide safety and health plan (SHP), quality assurance plan (QAP), and waste management plan (WMP).

1.2 Site Description

Motor Pool Area 3100, Parcel 147(7), is located on 23rd Street and is currently an active motor pool (Figure 1-2). The site covers approximately 4 acres. The motor pool contains two wash racks (Parcel 72[7]), an oil/water separator (OWS), facilities for large vehicle maintenance, a fuel pump island, a vehicle maintenance ramp (grease rack) and a large parking/staging area for military vehicles. Three active underground storage tanks (UST) are located at this site: two 10,000-gallon diesel tanks (Parcel 27[7]) and a 2,000-gallon waste oil tank (Parcel 28[7]). The 2,000-gallon waste oil UST located at the grease rack (3148) was closed in place (abandoned) and replaced in 1994 by a 2,000-gallon UST (Environmental Science and Engineering, Inc. [ESE], 1998). The Motor Pool Area 3100, 23rd Street, Parcels 147(7), 72(7), 27(7), and 28(7) falls within the "Possible Explosive Ordnance Impact Area" shown on Plate 10 of the FTMC Archive Search Report, Maps (USACE, 1998a).

The motor pool wash racks (Facilities 3146 and 3147) were built in the 1950s and originally had a baffle-type OWS. These facilities were rebuilt in 1991 and now have a settling basin attached to a coalescing plate OWS that discharges to the sanitary sewer system (ESE, 1998).

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FORT McCLELLAN BOUNDARY

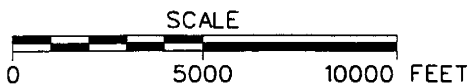


FIGURE 1-1

SITE LOCATION MAP

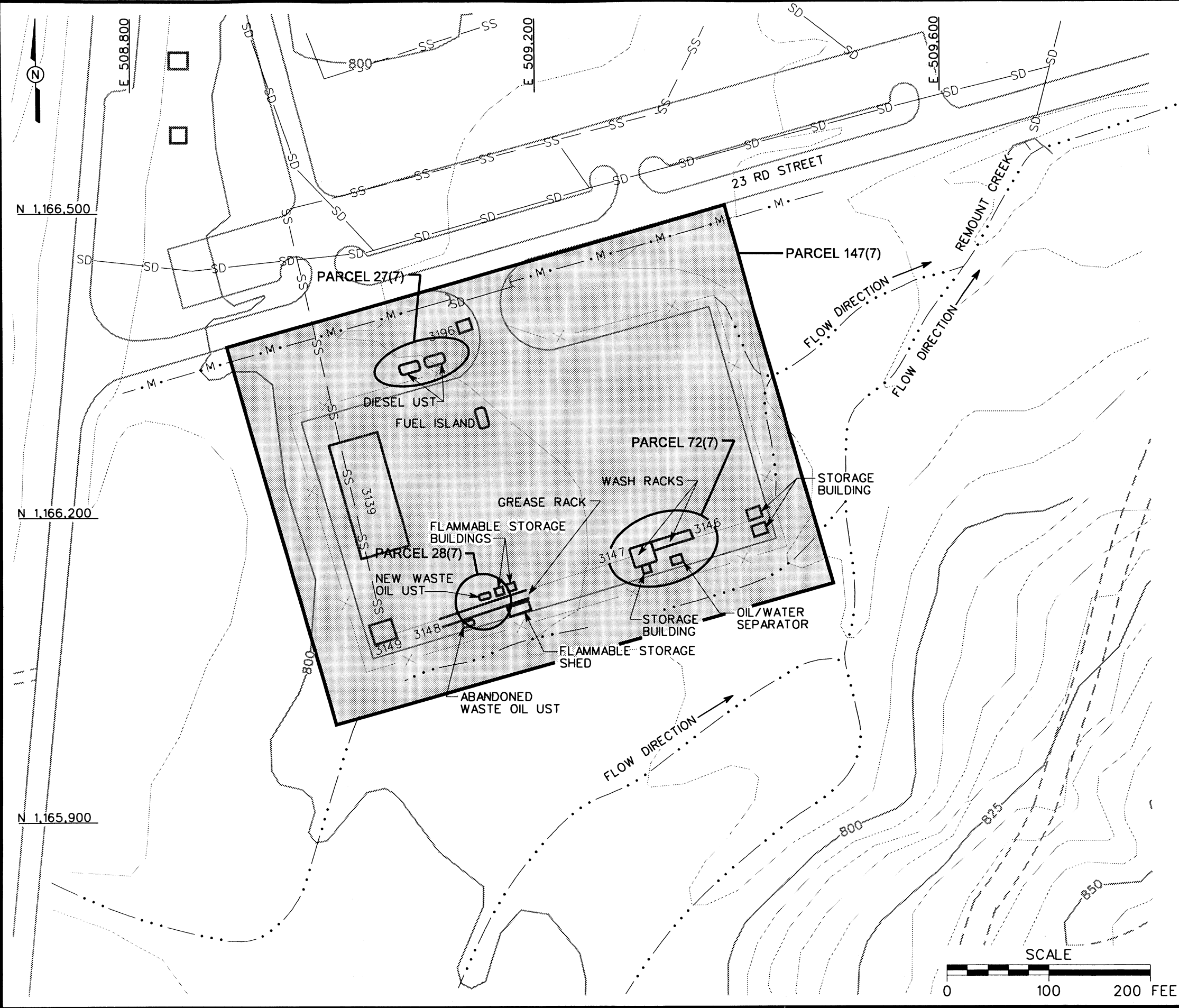
**MOTOR POOL AREA 3100,
23RD STREET**

**PARCELS 147(7), 72(7), 27(7)
& 28(7)**

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018



INTERNATIONAL
TECHNOLOGY
CORPORATION



- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS
 - PARCEL BOUNDARY
 - BRIDGE
 - CULVERT WITH HEADWALL
 - SURFACE DRAINAGE / CREEK
 - MANMADE SURFACE DRAINAGE FEATURE
 - FENCE
 - SANITARY SEWER LINE
 - STORM DRAINAGE LINE

FIGURE 1-2
SITE MAP
MOTOR POOL AREA 3100,
23RD STREET
PARCELS 147(7), 72(7), 27(7)
& 28(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

IT INTERNATIONAL
TECHNOLOGY
CORPORATION

The site elevation is approximately 795 feet. The depth to bedrock typically ranges from 2 feet to greater than 10 feet. The soils found at this site are composed of the Anniston and Allen Series soils. The depth to the water table for this series is usually greater than 20 feet; however, soil borings at the site have shown groundwater at 6 feet below ground surface (bgs) (Braun Intertec Corporation [Braun], 1995). Shallow groundwater direction at the site is probably controlled by topography, and would likely flow to the east or northeast on the site. Remount Creek flows northeast along the south side of the site.

The Anniston and Allen Series of soils consists of strongly acid, deep, well drained soils that have developed in old local alluvium. The parent material washed from the adjacent higher lying Linker, Muskingum, Enders, and Montevallo soils, which developed from weathered sandstone, shale, and quartzite. These sites contain sandstone and quartzite gravel and cobbles, which measure as much as 8 inches in diameter on the surface and throughout the soil.

Soils at this site fall into the Anniston and Allen gravelly loams, 2 to 6 percent slopes, eroded (AcB2). This mapping unit consists of friable soils that have developed in old alluvium on foot slopes and along the base of mountains. The color of the surface soil ranges from very dark brown and dark brown to reddish brown and dark reddish brown. The texture of subsoil ranges from light clay loam to clay or silty clay loam. The alluvium ranges in thickness from 2 feet to more than 8 feet. Infiltration and runoff are medium, permeability is moderate, and the capacity for available moisture is high. Organic matter is moderately low (U.S. Department of Agriculture, 1961).

1.3 Scope of Work

The scope of work for activities associated with the SI at the Motor Pool Area 3100, 23rd Street site, specified by the statement of work (USACE, 1998b), includes the following tasks:

- Develop the SFSP attachment.
- Develop the SSHP attachment.
- Conduct UXO avoidance surface sweeps and downhole surveys.
- Collect 8 surface soil samples, 15 subsurface soil samples, 9 groundwater samples, 2 surface water samples, 2 sediment samples, and 2 depositional soil samples to determine whether potential site-specific chemicals (PSSC) are present at the Motor Pool Area 3100, 23rd Street site and to provide data to determine any future planned corrective measures and closure activities.

At completion of the field activities and sample analyses, draft and final SI summary reports will be prepared in accordance with current U.S. Environmental Protection Agency (EPA) Region IV and the Alabama Department of Environmental Management (ADEM) requirements.

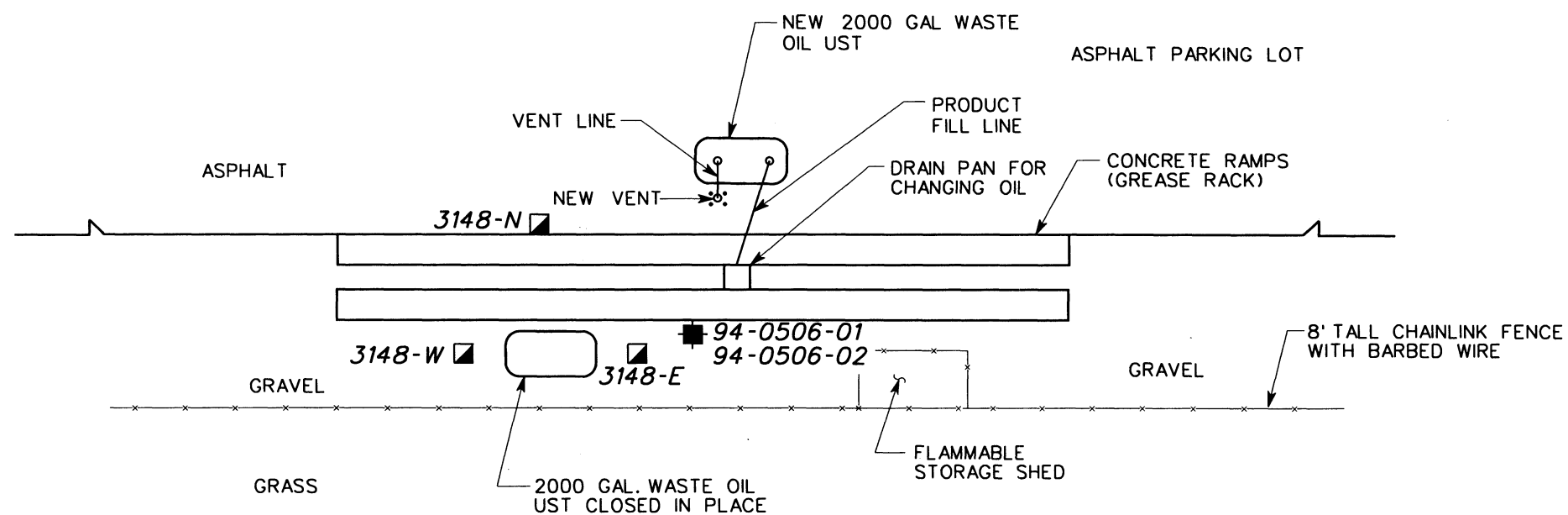
2.0 Summary of Existing Environmental Studies

ESE conducted an environmental baseline survey (EBS) to document current environmental conditions of all FTMC property (ESE, 1998). The study identified sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance on fast track cleanup at closing installations. The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria.

1. Areas where no storage, release, or disposal (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action underway.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the Community Environmental Response Facilitation Act (CERFA) (CERFA-Public Law 102-426) protocols and DOD policy regarding contamination assessment. Record searches and reviews were performed on all reasonably available documents from FTMC, ADEM, EPA Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and Resource Conservation and Recovery Act-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, visual site inspections were conducted to verify conditions of specific property parcels.

The 2,000-gallon waste oil UST (Parcel 28[7]) located south of the concrete ramps (Facility 3148 [grease rack]) and west of the flammable storage shed was closed in place on May 5, 1994 (Figure 2-1) (Braun, 1995). The UST was abandoned in place because it was located too close to the grease rack footers to be excavated and removed. The tank was filled in place with 11 cubic



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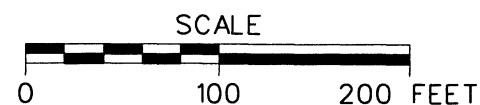
- ◻ EXISTING SURFACE AND SUBSURFACE SOIL SAMPLE
- EXISTING SUBSURFACE SOIL SAMPLE

FIGURE 2-1
WASTE OIL UST ABANDONMENT
SAMPLE LOCATIONS, PARCEL 28(7)
MOTOR POOL AREA 3100,
23RD STREET
PARCELS 147(7), 72(7), 27(7)
& 28(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018



SOURCE: BRAUN INTERTEC CORPORATION REPORT
"UST CLOSURE, SITE ASSESSMENT REPORT,
FORT McCLELLAN BUILDING 3148, CALHOUN COUNTY,
FORT McCLELLAN, ALABAMA", JANUARY 1995.



yards of concrete. The abandoned UST was replaced with a 2000-gallon UST that was installed on the north side of the grease rack (Figure 2-1).

Soil samples were collected from soil borings placed on the north, east, and west sides of the abandoned UST. Samples were also collected from beneath the aboveground waste oil piping extending from the grease rack to the UST. The three soil borings were advanced to 8 feet bgs. One sample was collected from each soil boring at approximately 7.5 feet for analysis. This depth was assumed to be at the bottom of the UST. A fourth soil boring could not be placed on the south side because of the close proximity of the fence. As stated in the report, there was no access to the outside of the fence in that area. These soil samples, summarized in Table 2-1 (Braun, 1995), were analyzed for total petroleum hydrocarbon (TPH) and total lead. Groundwater was encountered at 6 feet bgs in the three soil borings; however, groundwater sampling was not conducted.

The north side soil sample was below the reporting limit for TPH as well as below the ADEM action limit for TPH of 100 parts per million. The east and west samples were slightly above the reporting limit for TPH, but still below the action limit. The shallow soil sample collected from beneath the aboveground waste oil piping showed very high TPH concentrations in comparison to the deeper soil sample at the same location. A surface spill observed below the aboveground piping is suspected to be the cause for the elevated TPH levels in the soil below the piping (Braun, 1995). The ADEM closure report prepared by Braun indicates that soil was not removed from the UST site.

There were not any other investigations identified for Motor Pool 3100, 23rd Street. The Motor Pool Area 3100, 23rd Street is identified as a Category 7 CERFA site. This CERFA site is a parcel where petroleum products were stored, and possibly released onto the site or to the environment, and/or were disposed of on site property. The Motor Pool Area 3100, 23rd Street lacks adequate documentation and therefore requires additional evaluation to determine the environmental condition of the parcel.

Table 2-1

**Sample Data^a for the Abandonment of the 2000-Gallon Waste Oil UST
Motor Pool Area 3100, 23rd Street
Parcels 147(7), 72(7), 27(7), and 28(7)
Fort McClellan, Calhoun County, Alabama**

Sampling Task	Sample Number	Sample Location Sample Description	Sample Date	Vertical Sample Depth (feet)	Analytical Parameters	
					Total Lead (ppm) ^c	TPH ^b (ppm)
Samples collected at UST abandonment	94-0431-06	Boring 3148-W	4/25/94	7.5	11	15
	94-0431-07	Boring 3148-N	4/25/94	7.5	12	< 5
	94-0506-03	Boring 3148-E	5/20/94	7.5	15	10
	94-0506-01	Pipe trench "A"	5/20/94	0.5	39	9000
	94-0506-02	Pipe trench "B"	5/20/94	2.5	11	520

^aBraun Intertec Corporation (Braun) 1995, *UST Closure Report, Site Assessment Report, Fort McClellan Building 1800, Calhoun County, Fort McClellan, Alabama*, January.

^bTotal petroleum hydrocarbon compounds (EPA Method 418.1).

^cppm - Parts per million.

3.0 Site-Specific Data Quality Objectives

3.1 Overview

The data quality objectives (DQO) process is followed to establish data requirements. This process ensures that the proper quantity and quality of data are generated to support the decision-making process associated with the action selection for the Motor Pool Area 3100, 23rd Street site. This section incorporates the components of the DQO process described in the EPA publication EPA 540-R-93-071, *Data Quality Objectives Process for Superfund, Interim Final Guidance* (EPA, 1993). The DQO process as applied to the Motor Pool Area 3100, 23rd Street site is described in more detail in Sections 3.2 and 4.3 of the WP. Table 3-1 provides a summary of the factors used to determine the appropriate quantity of samples and the procedures necessary to meet the objectives of the SI, and to establish a basis for future action at this site. (SI, 1994b)

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with USACE-Civil Engineering South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

3.2 Data Users and Available Data

The intended data users and available data related to the SI at the Motor Pool Area 3100, 23rd Street site, presented in Table 3-1, have been used to formulate a conceptual site exposure model (CSEM) presented in Section 3.3. This CSEM was developed to support the preparation of this SFSP, which is necessary to meet the objectives of these activities and to establish a basis for future action at the site. The data users for the data and information generated during field activities are primarily the EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work. The program has also been designed to provide the level of defensible data and information required to confirm or rule out the existence of residual potential site-specific chemical(s) (PSSC) in the site media.

Table 3-1

Summary of Data Quality Objectives
Site Investigation, Motor Pool Area 3100, 23rd Street
Parcels 147(7), 72(7), 27(7), and 28(7)
Fort McClellan, Calhoun County, Alabama

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA, ADEM USACE, DOD FTMC, IT Corporation Other Contractors Possible future land users	Minimal UST Removal Sample Data	Contaminant Source Former Motor Pool Facility,	<u>Surface Soil</u>	SI to confirm the presence of PSSC in the site media	Surface soil TCL VOCs, TCL SVOCs, TAL Metals	Definitive data in CESAS Level B data packages	8 direct push soil samples + QC
		Migration Pathways - Infiltration to subsurface soil - Infiltration and leaching to groundwater	<u>Subsurface Soil</u>				
		- Erosion and runoff to surface water and sediment - Dust emissions and volatilization to ambient air	<u>Groundwater</u>				
		Potential Receptors Current and future grounds-keepers, current and future construction workers, future residents, current and future recreational site users	<u>Surface Water</u>	Definitive quality data for future decision making	Subsurface Soil TCL VOCs, TCL SVOCs, TAL Metals	Definitive data in CESAS Level B data packages	15 direct push soil samples + QC
		PSSC Diesel fuel, waste oil, other petroleum products; possibly solvents and metals	<u>Sediment</u>				
			<u>Depositional Soil</u>		Groundwater TCL VOCs, TCL SVOCs, TAL Metals	Definitive data in CESAS Level B data packages	9 direct-push groundwater samples + QC
ADEM - Alabama Department of environmental Management. CESAS - Corps of Engineers South Atlantic Savannah. DOD - U.S. Department of Defense. EPA - U.S. Environmental Protection Agency. FTMC - Fort McClellan. PSSC - Potential site-specific chemical.					Surface Water TCL VOCs, TCL SVOCs, TAL Metals	Definitive data in CESAS Level B data packages	2 surface water samples + QC
					<u>Sediment</u> TCL VOCs, TCL SVOCs, TAL Metals TOC, Grain Size	Definitive data in CESAS Level B data packages	2 sediment samples + QC
ADEM - Alabama Department of environmental Management. CESAS - Corps of Engineers South Atlantic Savannah. DOD - U.S. Department of Defense. EPA - U.S. Environmental Protection Agency. FTMC - Fort McClellan. PSSC - Potential site-specific chemical.					<u>Depositional Soil</u> TCL VOCs, TCL SVOCs, TAL Metals	Definitive + CESAS Level B data packages	2 depositional sample + QC

QC - Quality control.
VOC - Volatile organic compound.
SVOC - Semivolatile organic compound.
TAL - Target analyte list.
TCL - Target compound list.
USACE - U.S. Army Corps of Engineers.

3.3 Conceptual Site Exposure Model

The CSEM provides the basis for identifying and evaluating the potential risks to human health in the risk assessment. The CSEM includes the receptors appropriate to all plausible scenarios and the potential exposure pathways. Graphically presenting possible pathways by which a potential receptor may be exposed, including sources, release and transport pathways, and exposure routes, facilitates consistent and comprehensive evaluation of risk to human health, and helps to ensure that potential pathways are not overlooked. The elements necessary to construct a complete exposure pathway and develop the CSEM include:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptors
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact with a contaminated source medium.

Potential contaminants at this site include fuels and fuel components, waste oils, organic chemicals associated with vehicle maintenance, and possibly metals. Primary contaminant release was probably to surface and subsurface soil. Potential contaminant transport pathways include infiltration to subsurface soil, infiltration and leaching to groundwater, erosion and runoff to the surface water and sediment in the stream located to the south of the site, and dust emissions and volatilization to ambient air.

Motor Pool Area 3100, 23rd Street, is presently in use; therefore, current site use is best characterized as industrial. Plausible receptors under the current site-use scenario include the groundskeeper, construction worker, and the recreational site users including the youthful visitor who visits the site and plays in the small tributary to Remount Creek adjacent to the site. The only potential receptors considered but excluded for current and future purposes are the fish and venison consumption scenarios.

Future use of this site is likely to continue as industrial (particularly Building 3139), probably supporting National Guard activities (FTMC, 1997). Although, much of the area may be returned to open space, the most conservative assumption is that residential development could occur. Plausible receptors under the future site-use scenario(s) include the groundskeeper, construction worker, and recreational site user. The contaminant release and transport

mechanisms, source and exposure media, receptors, and exposure pathways are summarized in Figure 3-1.

Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling, specific ecological assessment methods, etc.) will be addressed in a separate document to be issued as the habitat-specific screening ecological risk assessment work plan.

3.4 Decision-Making Process, Data Uses, and Needs

The decision-making process consists of a seven-step process that is presented in detail in Sections 3.2 and 4.3 of the WP and will be followed during the SI at the Motor Pool Area 3100, 23rd Street site. Data uses and needs are summarized in Table 3-1.

3.4.1 Risk Evaluation

Confirmation of contamination at Motor Pool Area 3100, 23rd Street will be based on comparing detected site COPC to site-specific screening levels developed in the WP. EPA definitive data with CESAS Level B data packages will be used to achieve detection limits sufficient to determine whether or not the established guidance criteria are exceeded in site media. Definitive data will be adequate for confirming the presence of site contamination and for supporting a feasibility study and risk assessment.

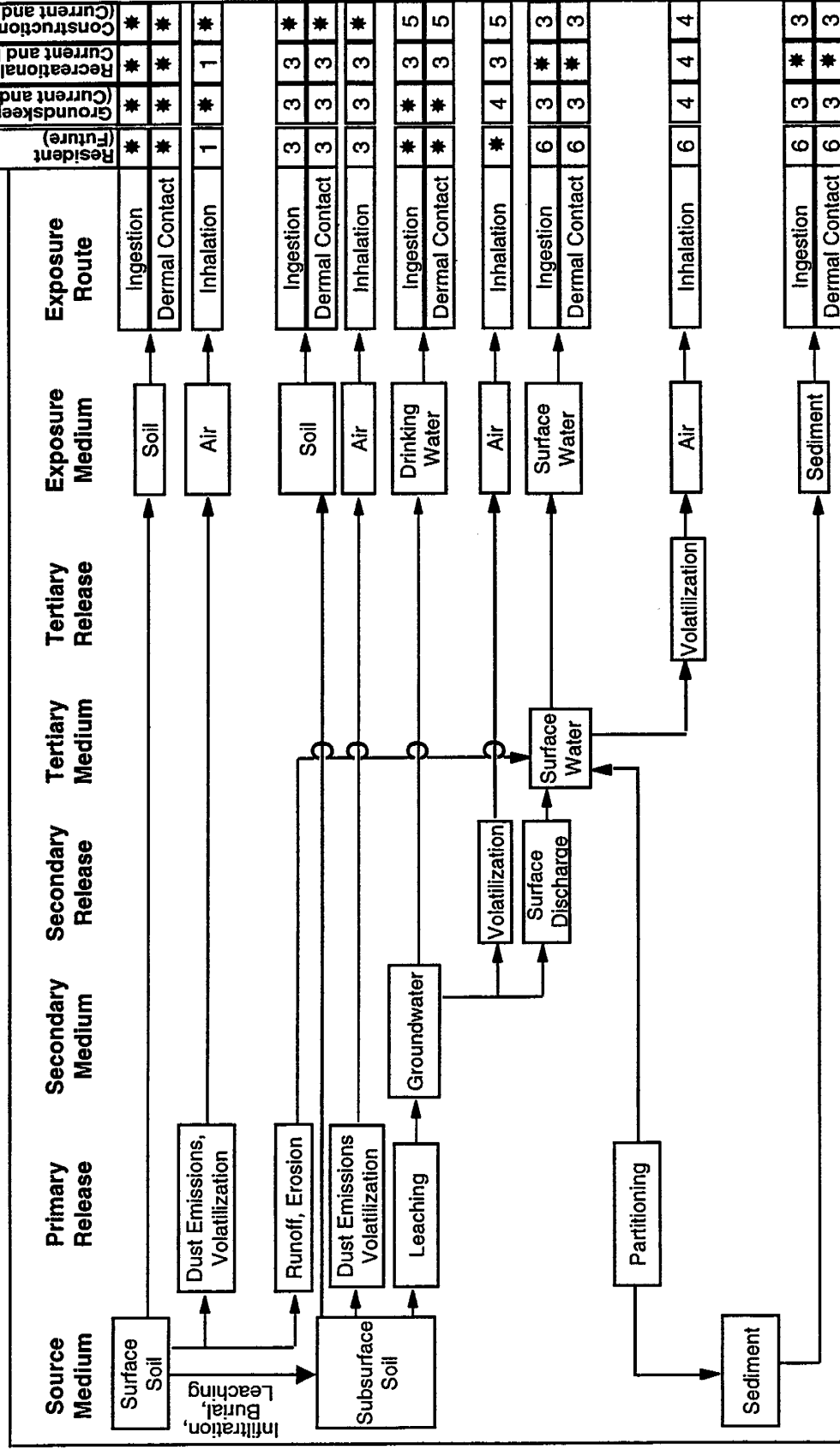
3.4.2 Data Types and Quality

Surface and subsurface soil, groundwater, surface water, sediment, and depositional soil will be sampled and analyzed to meet the objectives of the SI at the Motor Pool Area 3100, 23rd Street site. Quality assurance/quality control (QA/QC) samples will be collected for all sample types as described in Chapter 4.0 of this SFSP. Samples will be analyzed by EPA-approved SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

3.4.3 Precision, Accuracy, and Completeness

Laboratory requirements of precision, accuracy, and completeness for this SI are provided in Chapter 9.0 of the QAP.

Figure 3-1
Human Health Conceptual Site Exposure Model for Motor Pool Area 3100, 23rd Street
Fort McClellan, Alabama



* = Complete exposure pathway quantified in SSSL development.

1 = Volatilization from undisturbed surface soil deemed insignificant; soil is likely to be paved or vegetated, reducing dust emissions to insignificant levels; Inhalation pathway not quantified.
 2 = This scenario is created to assess indirect (food chain) exposure to surface soil, surface water and sediment.

3 = Incomplete exposure pathway.

4 = Although theoretically complete, this pathway is judged to be insignificant.

5 = Although theoretically complete, these pathways are not quantified for the construction worker because SSSLs developed for the groundskeeper would be at least as restrictive.

6 = Although theoretically complete, SSSLs for these pathways are developed only for the recreational site user. SSSLs developed for the recreational site user may be used to estimate risk for this receptor.

4.0 Field Activities

4.1 UXO Survey Requirements and Utility Clearances

The Motor Pool Area 3100, 23rd Street, site falls within the "Possible Explosive Ordnance Impact Area" shown on Plate 10 of the FTMC Archive Search Report, Maps (USACE, 1998a). Therefore, IT will conduct unexploded ordnance (UXO) avoidance activities, including surface sweeps and downhole surveys of soil boring in addition to conducting utility clearances before installing soil borings.

4.1.1 Surface UXO Survey

An UXO sweep will be conducted over areas that will be included in the sampling and surveying activities to identify UXO on or near the surface that may present a hazard to on-site workers during field activities. Low-sensitivity magnetometers will be used to locate surface and shallow-buried metal objects. UXO located on the surface will be identified and conspicuously marked for easy avoidance. UXO personnel requirements, procedures, and detailed descriptions of the geophysical equipment to be used are provided in Chapter 4.0 and Appendices D and E of the approved SAP (IT, 1998a).

4.1.2 Downhole UXO Survey

During the soil boring and downhole sampling, a downhole UXO survey will be performed to determine if buried metallic objects are present. UXO monitoring, as described in Chapter 4.0 of the SAP (IT, 1998a), will continue until undisturbed soils are encountered or the borehole has been advanced to 12 feet below ground surface, whichever is reached first.

4.1.3 Utility Clearances

After the UXO surface survey has cleared the area to be sampled and prior to performing any intrusive sampling, a utility clearance will be performed at all locations where soil and groundwater samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP. The site manager will mark the proposed locations with stakes, coordinate with the FTMC installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are approved (for both UXO and utility avoidance) for intrusive sampling, the stakes will be labeled as cleared.

4.2 Environmental Sampling

The environmental sampling program during the SI at the Motor Pool Area 3100, 23rd Street site includes the collection of 8 surface soil samples, 15 subsurface soil samples, 9 groundwater

samples, 2 surface water samples, 2 sediment samples, and 2 depositional soil samples for chemical analyses. These samples will be collected and analyzed to provide data for characterizing the site in order to determine the environmental condition of the site and any further action to be conducted at the site.

4.2.1 Surface Soil Sampling

Surface soil samples will be collected from 8 of the 15 soil borings installed at the Motor Pool Area 3100, 23rd Street site.

4.2.1.1 Sample Locations and Rationale

Surface soil samples will be collected near the UST sites, vehicle grease rack, fuel island, wash rack, OWS, and parking/staging areas. The surface soil sampling rationale is provided in Table 4-1. Proposed sampling locations are shown on Figure 4-1. Surface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact surface soil sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

4.2.1.2 Sample Collection Procedures

Surface soil samples will be collected from the upper 1 foot of soil by direct-push technology in accordance with the procedures specified in Section 4.7.1.1 of the SAP. Collected soil samples will be screened using a photoionization detector (PID) in accordance with Section 4.15 of the SAP. Surface soil samples will be screened with the PID for information only; not to select samples to submit for analysis. Sample containers, sample volumes, preservatives and holding times for the analyses required in this SFSP are listed in Chapter 5.0, Table 5-1 of the QAP. Sample documentation and chain of custody (COC) will be recorded as specified in Section 4.13 of the SAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.2 Subsurface Soil Sampling

Subsurface soil samples will be collected from 15 soil borings installed at the Motor Pool Area 3100, 23rd Street site. These soil borings will be installed near the UST sites, vehicle maintenance ramp, fuel island, wash rack, and OWS and in the vehicle parking/staging lot as described in Section 4.3.

4.2.2.1 Sample Locations and Rationale

Subsurface soil samples will be collected from the soil borings proposed on Figure 4-1. The subsurface soil sampling rationale is presented in Table 4-1. Subsurface soil sample designa-

Table 4-1

**Sample Locations And Rationale
Motor Pool Area 3100, 23rd Street,
Parcels 147(7), 72(7), 27(7), and 29(7)
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 2)

Sample Location	Sample Media	Sample Location Rationale
FTA-147-GP01	Surface soil, subsurface soil, and groundwater	One soil boring and one temporary well will be placed adjacent to north side of fuel island east of Building 3139. Sample data will indicate if the fuel leaks have occurred and contaminated soil exists near fuel island.
FTA-147-GP02	Surface soil, subsurface soil, and groundwater	One soil boring and one temporary well will be placed adjacent to south side of fuel island east of Building 3139. Sample data will indicate if the fuel leaks have occurred and contaminated soil exists near fuel island.
FTA-147-GP03	Subsurface soil	One soil boring for a subsurface soil sample will be placed adjacent (east side) to the diesel UST, located outside the fence. Sample data will indicate if the UST has leaked or if contaminated soil exists.
FTA-147-GP04	Surface soil, subsurface soil, and groundwater	One soil boring and one temporary well will be placed outside the fence and south of the flammable storage shed that is near the Grease Rack 3148. Sample data will indicate if potential site-specific chemical(s) (PSSC) were released in this area during former motor pool operations or other activities.
FTA-147-GP05	Surface soil, subsurface soil, and groundwater	One soil boring and one temporary well will be placed south of Wash Rack 3147 and west of the oil/water separator (OWS) in expected groundwater flow direction from OWS and wash rack. Sample data will indicate if PSSC were released in this area during former motor pool operations or other activities.
FTA-147-GP06	Subsurface soil	One soil sample boring for a subsurface soil sample will be placed through asphalt in front (adjacent north side) of the waste oil UST, near the grease rack. This sample data will indicate if PSSC were released during the operation of this motor pool area and if any contaminated soil exists around the UST.
FTA-147-GP07	Surface soil, subsurface soil, and groundwater	One soil boring and one temporary well will be placed on the north side of Wash Rack 3146 and east of the OWS in expected groundwater flow direction from OWS and wash rack. Sample data will indicate if PSSC were released in this area during former motor pool operations or other activities.
FTA-147-GP08	Surface soil, subsurface soil, and groundwater	One soil boring and one temporary well will be placed through asphalt near northeast corner of the site where obvious oil stain exists. Sample data will indicate level PSSC were released in this area during former motor pool operations or other activities.
FTA-147-GP09	Surface soil, subsurface soil, and groundwater	One soil boring and one temporary well will be placed south of Wash Rack 3146 and east of the oil/water separator (OWS) in expected groundwater flow direction from OWS and wash rack. Sample data will indicate if PSSC were released in this area during former motor pool operations or other activities.
FTA-147-GP10	Subsurface soil and groundwater	One soil boring and one temporary well will be placed adjacent to the abandoned waste oil UST located south of the Grease Rack 3148, and the south fence. Sample data will indicate if the tank has leaked and if contaminated soil exists around the abandoned UST.
FTA-147-GP11	Surface soil, subsurface soil, and groundwater	One soil boring and one temporary well will be placed through asphalt east of Building 3139 and in front of the rollup door at south end of Building 3139. Sample data will indicate if PSSC were released in this area during former motor pool operations or other activities.
FTA-147-GP12	Subsurface soil	One soil boring for a subsurface soil sample will be placed adjacent the diesel UST, located outside the fence. Sample data will indicate if the UST has leaked or if contaminated soil exists.

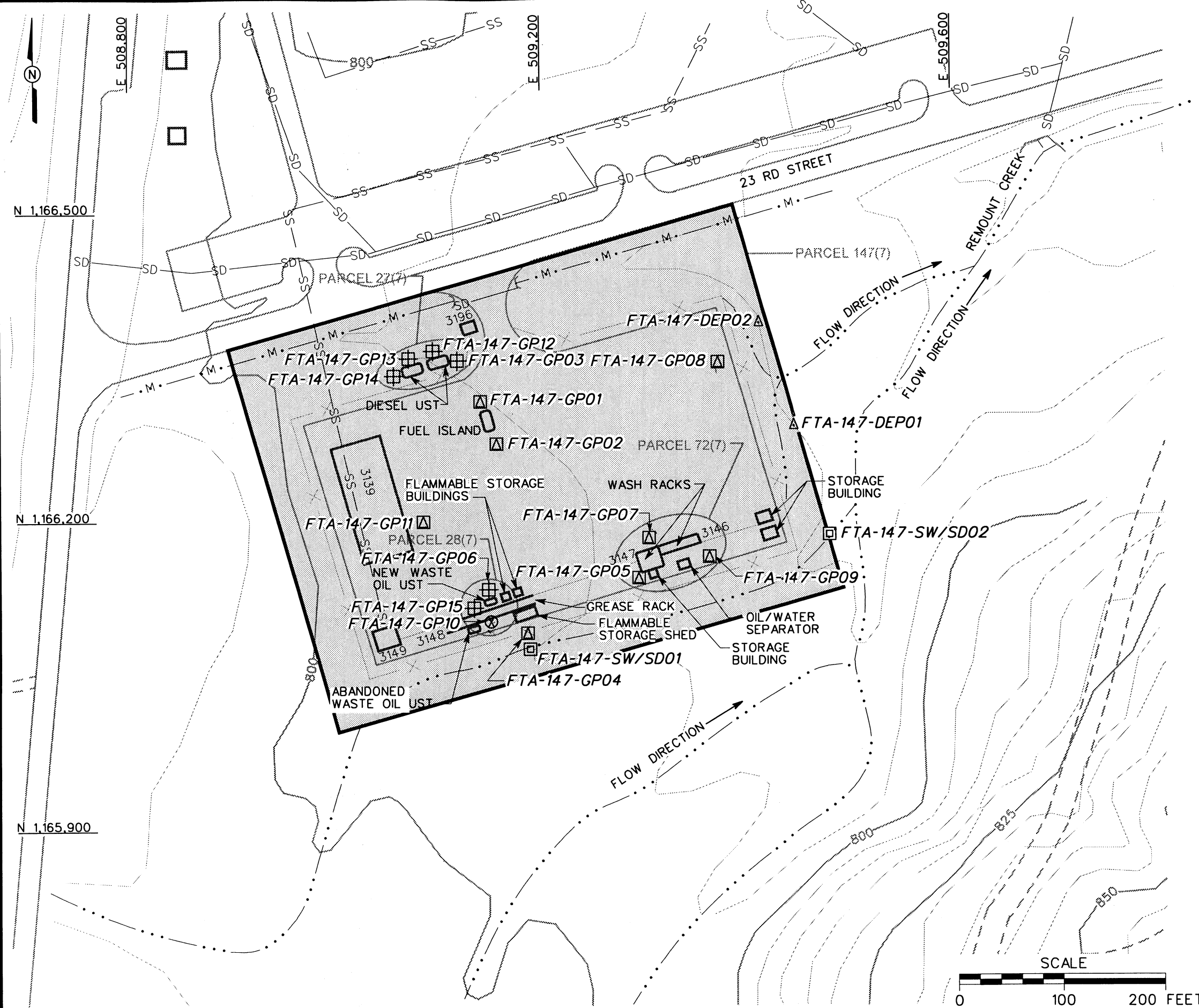
Table 4-1

**Sample Locations And Rationale
Motor Pool Area 3100, 23rd Street,
Parcels 147(7), 72(7), 27(7), and 29(7)
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 2)

Sample Location	Sample Media	Sample Location Rationale
FTA-147-GP13	Subsurface soil	One soil boring for a subsurface soil sample will be placed adjacent the diesel UST, located outside the fence. Sample data will indicate if the UST has leaked or if contaminated soil exists.
FTA-147-GP14	Subsurface soil	One soil boring for a subsurface soil sample will be placed adjacent the diesel UST, located outside the fence. Sample data will indicate if the UST has leaked or if contaminated soil exists.
FTA-147-GP15	Subsurface soil	One soil sample boring for a subsurface soil sample will be placed through asphalt in front (adjacent west side) of the waste oil UST, near the grease rack. This sample data will indicate if PSSC were released during the operation of this motor pool area and if any contaminated soil exists around the UST.
FTA-147-SW/SD01	Surface water and sediment	Based on topographic markings, surface runoff and sheet flow from the northern and eastern areas of the site will flow in a west-to-east direction. Runoff flow from the site could enter Remount Creek at the east corner of the site. The selected sample location is a potential deposition sink for PSSC from the site.
FTA-147-SW/SD02	Surface water and sediment	Based on topographic markings, surface runoff and sheet flow from the southwestern corner of the site could drain south into Remount Creek. The selected sample location is a potential deposition sink for PSSC from the site.
FTA-147-DEP01	Depositional soil	Based on topographic markings, surface runoff and sheet flow from northern and eastern areas of the site will flow in a west-to-east direction. Runoff flow from the site could exit the site along the eastern boundary, and into the wooded area to the east. The selected sample location is a potential deposition sink for PSSC from the site.
FTA-147-DEP02	Depositional soil	Based on topographic markings, surface runoff and sheet flow from northern and eastern areas of the site will flow in a west-to-east direction. Runoff flow from the site could exit the site along the eastern boundary, and into the wooded area to the east. The selected sample location is a potential deposition sink for PSSC from the site.

02 OCT 98
 STARTING DATE: 05/14/98
 DRAWN BY: D. BILLINGSLEY
 DATE LAST R...
 DRAFT, CHCK. BY:
 ENGR. CHCK. BY: A. MAYLA
 PROJ. NO.: 774645
 DWG. NO.: 74645es.066
 INITIATOR: J. RAGSDALE
 PROJ. MGR.: J. YACOB



- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS
 - PARCEL BOUNDARY
 - BRIDGE
 - CULVERT WITH HEADWALL
 - SURFACE DRAINAGE / CREEK
 - MANMADE SURFACE DRAINAGE FEATURE
 - FENCE
 - SANITARY SEWER LINE
 - STORM DRAINAGE LINE
 - PROPOSED SURFACE WATER/SEDIMENT SAMPLE
 - PROPOSED SUBSURFACE SOIL SAMPLE
 - PROPOSED GROUNDWATER, SURFACE AND SUBSURFACE SOIL SAMPLE
 - PROPOSED GROUNDWATER AND SUBSURFACE SOIL SAMPLE
 - PROPOSED DEPOSITIONAL SOIL SAMPLE

FIGURE 4-1
PROPOSED SAMPLE LOCATIONS
MOTOR POOL AREA 3100,
23RD STREET
PARCELS 147(7), 72(7), 27(7)
& 28(7)

U. S. ARMY CORPS OF ENGINEERS
 MOBILE DISTRICT
 FORT McCLELLAN
 CALHOUN COUNTY, ALABAMA
 Contract No. DACA21-96-D-0018

SCALE
 0 100 200 FEET

INTERNATIONAL
 TECHNOLOGY
 CORPORATION

Table 4-2

Soil, Sediment and Depositional Soil Sample Designations and QA/QC Sample Quantities
 Motor Pool 3100, 23rd Street,
 Parcels 147(7), 72(7), 27(7) and 28(7)
 Fort McClellan, Calhoun County, Alabama

(1 of 2)

Sample Location	Sample Designation	Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Spills	MS/MSD	
FTA-147-GP01	FTA-147-GP01-SS-EG0001-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-147-GP01-DS-EG0002-REG	a				
FTA-147-GP02	FTA-147-GP02-SS-EG0003-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-147-GP02-DS-EG0004-REG	a				
FTA-147-GP03	FTA-147-GP03-SS-EG0005-REG	b				TCL VOCs, TCL SVOCs, TAL Metals
FTA-147-GP04	FTA-147-GP04-SS-EG0008-REG	0-1	FTA-147-GP04-SS-EG0007-FD	FTA-147-GP04-SS-EG0008-FS		TCL VOCs, TCL SVOCs, TAL Metals
	FTA-147-GP04-DS-EG0009-REG	a				
FTA-147-GP05	FTA-147-GP05-SS-EG0010-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-147-GP05-DS-EG0011-REG	a				
FTA-147-GP06	FTA-147-GP06-SS-EG0012-REG	b				TCL VOCs, TCL SVOCs, TAL Metals
FTA-147-GP07	FTA-147-GP07-SS-EG0013-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-147-GP07-DS-EG0014-REG	a				
FTA-147-GP08	FTA-147-GP08-SS-EG0015-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-147-GP08-DS-EG0016-REG	a				
FTA-147-GP09	FTA-147-GP09-SS-EG0017-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-147-GP09-DS-EG0018-REG	a				
FTA-147-GP10	FTA-147-GP10-DS-EG0019-REG	a	FTA-147-GP10-DS-EG0020-FD			TCL VOCs, TCL SVOCs, TAL Metals
FTA-147-GP11	FTA-147-GP11-SS-EG0021-REG	0-1			FTA-147-GP11-SS-EG0021-MS FTA-147-GP11-SS-EG0021-MSD	TCL VOCs, TCL SVOCs, TAL Metals
	FTA-147-GP11-DS-EG0022-REG	a				
FTA-147-GP12	FTA-147-GP12-DS-EG0023-REG	b				TCL VOCs, TCL SVOCs, TAL Metals
FTA-147-GP13	FTA-147-GP13-DS-EG0024-REG	b				TCL VOCs, TCL SVOCs, TAL Metals
FTA-147-GP14	FTA-147-GP14-DS-EG0025-REG	b				TCL VOCs, TCL SVOCs, TAL Metals
FTA-147-GP15	FTA-147-GP15-DS-EG0028-REG	b				TCL VOCs, TCL SVOCs, TAL Metals
FTA-147-DEP01	FTA-147-DEP01-DEP-EG0027-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals

Table 4-2

Soil, Sediment and Depositional Soil Sample Designations and QA/QC Sample Quantities
Motor Pool 3100, 23rd Street,
Parcels 147(7), 72(7), 27(7) and 28(7)
Fort McClellan, Calhoun County, Alabama

(2 of 2)

Sample Location	Sample Designation	Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-147-DEP02	FTA-147-DEP02-DEP-EG0028-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
FTA-147-SW/SD01	FTA-147-SW/SD01-SD-EG1001-REG	N/A	FTA-147-SW/SD01-SD-EG1002-FD			TCL VOCs, TCL SVOCs, TAL Metals, TOC, Grain Size
FTA-147-SW/SD02	FTA-147-SW/SD02-SD-EG1003-REG	N/A				TCL VOCs, TCL SVOCs, TAL Metals, TOC, Grain Size

* Actual sample depth selected for analysis will be at the discretion of the site geologist and will be based on field observation.

* Sample depth will be immediately below the estimated bottom depth of the UST.

QA/QC - Quality assurance/quality control.
VOC - Volatile organic compound.
SVOC - Semivolatile organic compound.
TAL - Target analyte list.

TCL - Target compound list.
REG - Field sample.
FD - Field duplicate.
FS - Field split.

MS/MSD - Matrix spike/matrix spike duplicate.
TOC - Total organic carbon.
N/A - not applicable.

tions, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact soil boring sampling locations will be determined in the field by the on-site geologist based on actual field observations.

4.2.2.2 Sample Collection Procedures

Subsurface soil samples will be collected from soil borings at a depth greater than 1-foot bgs in the unsaturated zone. The soil borings will be advanced and soils samples collected using the direct-push sampling procedures specified in Section 4.7.1.1 of the SAP.

Soil samples will be collected continuously for the first 12 feet or until either groundwater or refusal is reached. A detailed lithological log will be recorded by the on-site geologist for each borehole. At least one subsurface sample from each borehole will be selected for analyses. The collected subsurface soil samples will be field-screened using a photoionization detector (PID) in accordance with Section 4.15 of the SAP to measure samples exhibiting elevated readings above background (readings in ambient air). Typically, the subsurface soil sample showing the highest readings above background using the PID will be sampled and submitted to the laboratory for analysis. If none of the sample intervals collected indicate elevated readings on the PID, the deepest interval collected will be submitted for laboratory analyses. Subsurface soil samples will be selected for analyses from any depth interval if the on-site geologist suspects PSSC at the interval. Site conditions such as lithology may also determine the actual sample depth interval submitted for analyses. More than one subsurface soil sample will be collected if field measurements and observations indicate a possible layer of PSSC and/or additional sample data would provide insight to the existence of any PSSC.

Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP.

Sample containers, sample volumes, preservatives and holding times for the analyses required in this SFSP are listed in Chapter 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.3 Groundwater Sampling

Groundwater samples will be collected from 9 temporary wells installed at the Motor Pool Area 3100, 23rd Street site.

4.2.3.1 Sample Locations and Rationale

Groundwater samples will be collected from temporary wells installed at the site. Groundwater samples will be collected from the locations shown on Figure 4-1. The groundwater sampling

rationale is listed in Table 4-1. The groundwater sample designations, depths, and required QA/QC sample quantities are listed in Table 4-3. The exact sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

4.2.3.2 Sample Collection Procedures

Groundwater samples will be collected in accordance with the procedures and methods specified in Section 4.7.1.1 of the SAP. Direct-push temporary wells will be completed in the water table (to a depth where sufficient water is encountered) to collect a groundwater sample. The temporary well will be completed in the soil boring for collecting a water sample from the water table surface.

Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Chapter 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.4 Surface Water Sampling

Two surface water samples will be collected from Remount Creek, which flows in a northeasterly direction along the south side of the Motor Pool Area 3100, 23rd Street site.

4.2.4.1 Sample Locations and Rationale

The surface water sampling rationale is listed in Table 4-1. Surface water samples will be collected from the locations proposed on Figure 4-1. The surface water sample designations and required QA/QC sample requirements are listed in Table 4-3. The exact sampling locations will be determined in the field by the ecological sampler, based on drainage pathways and actual field observations.

4.2.4.2 Sample Collection Procedures

Surface water samples will be collected in accordance with the procedures specified in Section 4.9.1.3 of the SAP. Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Chapter 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.5.

Table 4-3

Groundwater and Surface Water Sample Designations and QA/QC Sample Quantities
Motor Pool 3100, 23rd Street, Parcels 147(7), 72(7), and 27(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			MS/MSD	Analytical Suite
			Field Duplicates	Field Splits			
FTA-147-GP01	FTA-147-GP01-GW-EG3001-REG	Water Table ^a					TCL VOCs, TCL SVOCs, TAL Metals
FTA-147-GP02	FTA-147-GP02-GW-EG3002-REG	Water Table ^a					TCL VOCs, TCL SVOCs, TAL Metals
FTA-147-GP04	FTA-147-GP04-GW-EG3003-REG	Water Table ^a	FTA-147-GP04-GW-EG3004-FD	FTA-147-GP04-GW-EG3005-FS			TCL VOCs, TCL SVOCs, TAL Metals
FTA-147-GP05	FTA-147-GP05-GW-EG3006-REG	Water Table ^a					TCL VOCs, TCL SVOCs, TAL Metals
FTA-147-GP07	FTA-147-GP07-GW-EG3008-REG	Water Table ^a					TCL VOCs, TCL SVOCs, TAL Metals
FTA-147-GP08	FTA-147-GP08-GW-EG3009-REG	Water Table ^a					TCL VOCs, TCL SVOCs, TAL Metals
FTA-147-GP09	FTA-147-GP09-GW-EG3010-REG	Water Table ^a					TCL VOCs, TCL SVOCs, TAL Metals
FTA-147-GP10	FTA-147-GP10-GW-EG3011-REG	Water Table ^a					TCL VOCs, TCL SVOCs, TAL Metals
FTA-147-GP11	FTA-147-GP11-GW-EG3012-REG	Water Table ^a			FTA-147-GP11-GW-EG0012-MS FTA-147-GP11-GW-EG0012-MSD		TCL VOCs, TCL SVOCs, TAL Metals
FTA-147-SW/SD01	FTA-147-SW/SD01-SW-EG2001-REG	N/A					TCL VOCs, TCL SVOCs, TAL Metals
FTA-147-SW/SD02	FTA-147-SW/SD02-SW-EG2002-REG	N/A			FTA-147-SW/SD02-SW-EG2002-MS FTA-147-SW/SD02-SW-EG2002-MSD		TCL VOCs, TCL SVOCs, TAL Metals

^a Sample depth will depend on where sufficient first water is encountered to collect a water sample.

FD - Field duplicate.
 FS - Field split.
 MS/MSD - Matrix spike/matrix spike duplicate.
 N/A - Not applicable
 QA/QC - Quality assurance/quality control.

REG - Field sample.
 SVOC - Semivolatile organic compound.
 TAL - Target analyte list.
 TCL - Target compound list.
 VOC - Volatile organic compound.

4.2.5 Sediment Sampling

Two sediment samples will be collected from Remount Creek, which flows in a northeasterly direction along the south side of the Motor Pool Area 3100, 23rd Street site. These sediment samples will be collected at the same locations as the surface water samples described in Section 4.3.4.

4.2.5.1 Sample Locations and Rationale

The tentative locations for the two sediment samples are shown in Figure 4-1. Sediment sampling rationale is presented in Table 4-1. Sediment sample designations and required QA/QC sample requirements are listed in Table 4-2. The actual sediment sample points will be at the discretion of the ecological sampler, based on the drainage pathways and actual field observations.

4.2.5.2 Sample Collection Procedures

Sediment samples will be collected in accordance with the procedures specified in Section 4.9.1.2 of the SAP. Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. The sediment samples will be analyzed for the parameters listed in Section 4.5.

4.2.6 Depositional Soil Sampling

Two depositional soil samples will be collected at the Motor Pool Area 3100, 23rd Street site.

4.2.6.1 Sample Locations and Rationale

The depositional soil samples will be collected in the drainage area just outside the fence at the east end of the site. The sampling rationale is listed in Table 4-1 and the proposed sampling location is shown on Figure 4-1. The depositional soil sample designation, depth, and required QA/QC sample quantities are listed in Table 4-2. The actual depositional soil sample point will be at the discretion of the ecological sampler, based on the physical characteristics of the drainage area and actual field observations.

4.2.6.2 Sample Collection Procedures

Depositional soil sample collection will be conducted in accordance with the procedures for surface soil sample collection specified in Section 4.9.1.1 of the SAP. Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives and holding times for the analyses required in this SFSP are listed in Chapter 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5.

4.3 Decontamination Requirements

Decontamination will be performed on sampling and nonsampling equipment to prevent cross-contamination between sampling locations. Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP. Decontamination of nonsampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP.

4.4 Surveying of Sample Locations

Sampling locations will be marked with pin flags, stakes, and/or flagging, and will be surveyed using either global positioning system (GPS) or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the Alabama State Plane Coordinate System, 1983 North American Datum (NAD83). Elevations will be referenced to the National Geodetic Vertical Datum of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Horizontal coordinates for soil, sediment, and surface water locations will be recorded using a GPS to provide accuracy within 1 meter. Because of the need to use temporary wells to determine water levels, a higher level of accuracy is required. Temporary wells will be surveyed to an accuracy of 0.1 foot for horizontal coordinates and 0.01 foot for elevations, using survey-grade GPS techniques and/or conventional civil survey techniques, as required.

Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.

4.5 Analytical Program

Samples collected at locations specified in Chapter 4.0 of this SFSP will be analyzed for the specific suites of chemicals and elements based on the history of site usage, as well as the EPA, ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the Motor Pool Area 3100, 23rd Street site consist of the following list of analytical suites:

- Target compound list (TCL) volatile organic compounds - Method 5035/8260B
- TCL semivolatile organic compounds - Method 8270C
- Target analyte list metals – Method 6010B/7000.

In addition, the sediment samples will be analyzed for the following list of parameters:

- Total Organic Carbon – Method 9060
- Grain Size – American Society for Testing and Materials D-421/D-422.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-4 in this SSFP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using CLP-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

4.6 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping will follow the procedures as specified in Section 4.13.2 of the SAP. Completed analysis request/COC records will be secured and included with each shipment of coolers to the following subcontract laboratory:

Sample Receiving
 Quanterra Environmental Services
 5815 Middlebrook Pike
 Knoxville, Tennessee 37921
 Telephone: (423) 588-6401.

Split samples collected for the USACE Laboratory will be shipped to the following address:

USACE South Atlantic Division Laboratory
 Attn: Sample Receiving
 611 South Cobb Drive
 Marietta, Georgia 30060
 Telephone: (770) 919-5270

4.7 Investigation-Derived Waste Management

Management and disposal of the investigation-derived wastes (IDW) will follow procedures and requirements as described in Appendix D of the SAP. The IDW expected to be generated at the Motor Pool Area 3100, 23rd Street site will include decontamination fluids and disposable personal protective equipment. The IDW will be staged in the fenced area around Buildings 335 and 336 while awaiting final disposal.

Table 4-4

Analytical Samples
Motor Pool Area 3100, 23rd Street,
Parcels 147(7), 72, and 27(7)
Fort McClellan, Calhoun County, Alabama

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples			QA/QC Samples ^a						Quanterra	
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Splits w/ QA Lab (5%)	MS/MSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)	Total No. Analysis	QA Lab Total No. Analysis	
Motor Pool Area 3100, 23rd Street: 11 water matrix samples (9 groundwater, and 2 surface water); 27 soil matrix samples (8 surface soil, 15 subsurface soil, 2 sediment and 2 depositional soil)														
TCL VOCs	8260B	water	normal	11	1	11	1	1	1	3	1	18	1	
TCL SVOCs	8270C	water	normal	11	1	11	1	1	1	1	1	15	1	
Tot TAL Metals	6010B/7000	water	normal	11	1	11	1	1	1	1	1	15	1	
TCL VOCs	8260B	soil	normal	27	1	27	3	1	1	1	1	33	1	
TCL SVOCs	8270C	soil	normal	27	1	27	3	1	1	1	1	33	1	
TAL Metals	6010B/7000	soil	normal	27	1	27	3	1	1	1	1	33	1	
TOC	9060	sediment	normal	27	1	27						27	0	
Grain Size	ASTM D-421/D-422	sediment	normal	27	1	27						27	0	
Motor Pool Area 3100, 23rd Street Subtotal:							12	6	6	3	6	201	6	

^aField duplicate, QA split, and MS/MSD samples were calculated as a percentage of the field samples collected per site and were rounded to the nearest whole number. Trip blank samples will be collected in association with water matrix samples for VOC analysis only. Assumed 4 field samples per day to estimate trip blanks. Equipment blanks will be collected once per event whenever sampling equipment is field decontaminated and re-used. They will be repeated weekly for sampling events that are anticipated to last more than 1 week. Assumed 20 field samples will be collected per week to estimate number of equipment blanks.

Ship samples to:

Quanterra Environmental Services
 5815 Middlebrook Pike
 Knoxville, Tennessee 37921
 Attn: John Reynolds
 Tel: 423-588-6401 Fax: 423-584-4315

USACE Laboratory split samples are shipped to:

USACE South Atlantic Division Laboratory
 Attn: Sample Receiving
 611 South Cobb Drive
 Marietta, Georgia 30060-3112
 Tel: 770-919-5270

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

TOC - Total organic carbon

VOC - Volatile organic compound

4.8 Site-Specific Safety and Health

Safety and health requirements for this SI are provided in the SSHP attachment for Motor Pool Area 3100, 23rd Street, Parcels 147(7), 72(7) 27(7), and 28(7). The SSHP attachment will be used in conjunction with the SHP.

5.0 Project Schedule

The project schedule for the SI activities will be provided by the IT project manager to the Base Closure Team on a monthly basis.

6.0 References

Braun Intertec Corporation (Braun) 1995, *UST Closure Report, Site Assessment Report, Fort McClellan Building 3138, Calhoun County, Fort McClellan, Alabama*, January.

Environmental Science and Engineering Inc. (ESE), 1998, *Final Environmental Baseline Survey, Fort McClellan, Alabama*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

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IT Corporation (IT), 1998b, *Final Installation-Wide Work Plan, Fort McClellan, Calhoun County, Alabama*, August.

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U.S. Army Corps of Engineers (USACE), 1994, *Requirements for the Preparation of Sampling and Analysis Plans*, Engineer Manual EM 200-1-3, September 1.

U.S. Department of Agriculture, 1961, *Soil Survey, Calhoun County, Alabama*, Soil Conservation Service, Series 1958, No. 9, September.

U.S. Environmental Protection Agency (EPA), 1993, *Data Quality Objectives Process for Superfund, Interim Final Guidance*, EPA 540-R-93-071, September.

Site Investigation
Final
Site-Specific Field Sampling Plan Attachment
for the Post Garbage Dump
North of Reilly Airfield, Parcel 126(7)

Fort McClellan
Calhoun County, Alabama

Prepared for:

U.S. Army Corps of Engineers, Mobile District
109 St. Joseph Street,
Mobile, Alabama 36602

Prepared by:

IT Corporation
312 Directors Drive
Knoxville, Tennessee 37923

Delivery Order CK005
Contract No. DACA21-96-D-0018
IT Project No. 774645

October 1998

Revision 1

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List of Acronyms

ADEM	Alabama Department of Environmental Management
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
CLP	Contract Laboratory Program
CSEM	conceptual site exposure model
DOD	U.S. Department of Defense
DQO	data quality objective
EBS	environmental baseline survey
EM	electromagnetic
EPA	U.S. Environmental Protection Agency
ESE	Environmental Sciences and Engineering
E-W	east-west
FTMC	Fort McClellan
GPR	ground-penetrating radar
GPS	global positioning system
IDW	investigation-derived waste
IT	IT Corporation
NAD	North American Datum
NGVD	National Geodetic Vertical Datum
N-S	north-south
PID	photoionization detector
PSSC	potential site-specific chemical(s)
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
SAP	installation-wide sampling and analysis plan
SFSP	site-specific field sampling plan
SHP	installation-wide safety and health plan
SI	site investigation
SSHP	site-specific safety and health plan
SVOC	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TOC	total organic carbon

List of Acronyms *(Continued)*

USACE	U.S. Army Corps of Engineers
VOC	volatile organic compound
WMP	waste management plan
WP	installation-wide work plan

Executive Summary

In accordance with Contract No. DACA21-96-D-0018, Delivery Order CK005, IT Corporation (IT) will conduct site investigation activities at the Post Garbage Dump, Parcel 126(7), at Fort McClellan (FTMC), Calhoun County, Alabama, to determine the presence or absence of potential site-specific chemicals (PSSC) at this site. The purpose of this site-specific field sampling plan (SFSP) is to provide technical guidance for sampling activities at the Post Garbage Dump, Parcel 126(7), site.

The Post Garbage Dump site is located near the northern boundary of the Main Post east of Reilly Lake (Figure 1-1). The study area, also known as Parcel 126(7), covers approximately 1.58 acres. The site is bounded on the south by Parcel 227(7), a former fill area. Reilly Airfield is located south of the Parcel 227(7). Parcel 126(7) is bounded on the west, east, and north by undeveloped land. The site consists of a steep north-facing slope adjacent to Parcel 227(7). The crest, slope, and slope toe all face north to north-northeast toward a wetland area from east to west across the toe of the slope that borders Reilly Lake. Shallow groundwater at the site is probably controlled by surface drainage and/or topography. Site elevation is approximately 725 to 755 feet above sea level as established by the National Geodetic Vertical Datum (NGVD). Figure 1-2 is a site map showing topographic features and the site boundaries.

Parcel 126(7) was located incorrectly in the environmental baseline study (ESE, 1998). This parcel has been relocated on the figures of this document based on the information provided by Lisa Kingsbury, FTMC, and Chris Johnson, ADEM.

Specifically, IT will perform a geophysical survey to determine the location and extent of the landfill area. Also, IT will collect three surface soil samples, three subsurface soil samples, three groundwater samples, three surface water samples, and three sediment samples at this site. Chemical analyses of the samples collected during the field program will include volatile organic compounds (VOC), semivolatile organic compounds (SVOC), metals, chlorinated pesticides, polychlorinated biphenyls, chlorinated herbicides, and organophosphorus pesticides. Results from these analyses will be compared with site-specific screening levels as specified in the installation-wide work plan (WP) and regulatory agency guidelines.

The summary report for Parcel 126(7) will be combined with Parcel 227(7) because it appears that Parcel 126(7) is an extension of Parcel 227(7), and therefore, both parcels will be investigated jointly.

This SFSP attachment to the installation-wide sampling and analysis plan (SAP) for the Post Garbage Dump, Parcel 126(7), will be used in conjunction with the site-specific safety and health plan (SSHP), the WP, the habitat-specific screening ecological risk assessment work plan, and the SAP. The SAP includes the installation-wide safety and health plan, waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

1.0 Project Description

1.1 Introduction

The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Post Garbage Dump North of Reilly Airfield, Parcel 126(7), under Delivery Order CK005, Contract No. DACA21-96-D-0018.

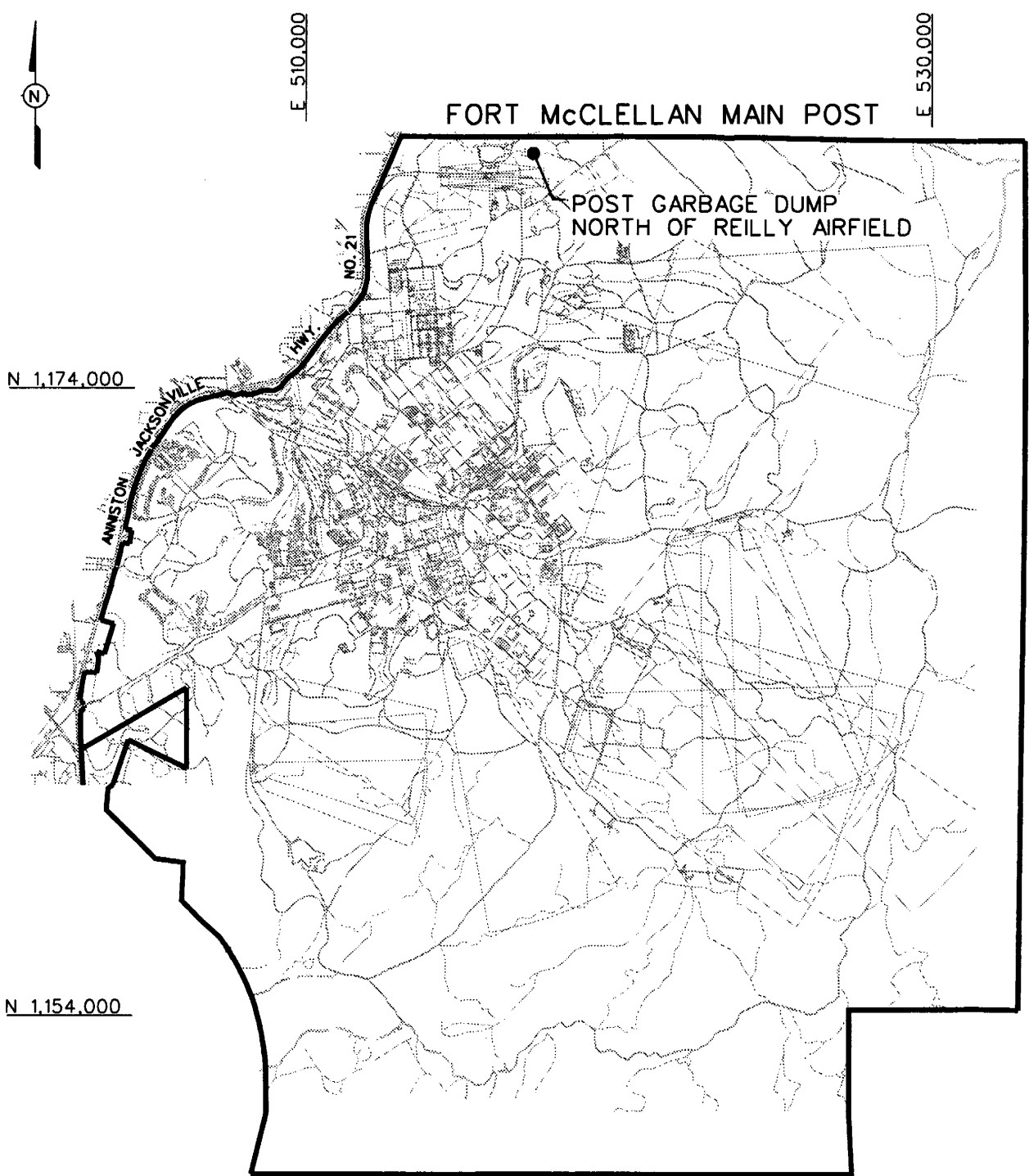
This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for FTMC, Calhoun County, Alabama, has been prepared to provide technical guidance for sample collection and analysis at the Post Garbage Dump North of Reilly Airfield (Figure 1-1). The SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Post Garbage Dump, and the installation-wide work plan (WP) (IT, 1998b), the habitat-specific screening ecological risk assessment work plan, and SAP. The SAP includes the installation-wide safety and health plan (SHP), waste management plan (WMP), and quality assurance plan (QAP).

1.2 Site Description


FTMC is an U.S. Army installation located in Calhoun County, Alabama, that occupies approximately 45,679 acres. The Main Post installation is bounded on the south and west by the city of Anniston and on the northwest by the city of Weaver. Pelham Range is 5 miles due west of the Main Post installation and adjoins Anniston Army Depot along its northern boundary. Adjoining the Main Post installation to the east is the Choccolocco Corridor, which provides an access corridor connecting the installation to the Talladega National Forest.

The Post Garbage Dump site is located near the northern boundary of the Main Post east of Reilly Lake (Figure 1-1). The study area, also known as Parcel 126, covers approximately 1.58 acres. The site is bounded on the south by Parcel 227, a former fill area. Reilly Airfield is located south of Parcel 227. Parcel 126 is bounded on the west, east, and north by undeveloped land. The site consists of a steep north-facing slope below the former fill area that borders a wetland (Figure 1-2). While the crest, slope, and slope toe all face north to north-northeast, there is wetland running from east to west across the toe of the slope and toward Reilly Lake. Shallow groundwater at the site is probably controlled by surface drainage and/or topography. Site

DWG. NO.: ... \774645es.019	INITIATOR: T. NOLEN	DATE LAST REV.:	STARTING DATE: 04/30/98	02 OCT 98
PROJ. NO.: 774645	ENGR. CHCK. BY: J. YACOB	DRAWN BY: D. BILLINGSLEY	15-07-10	
	DRAFT. CHCK. BY:			
	ENGR. CHCK. BY: A. MAYILA			



LEGEND:

 FORT McCLELLAN BOUNDARY

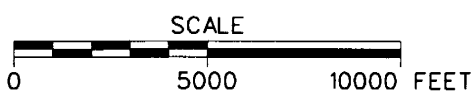
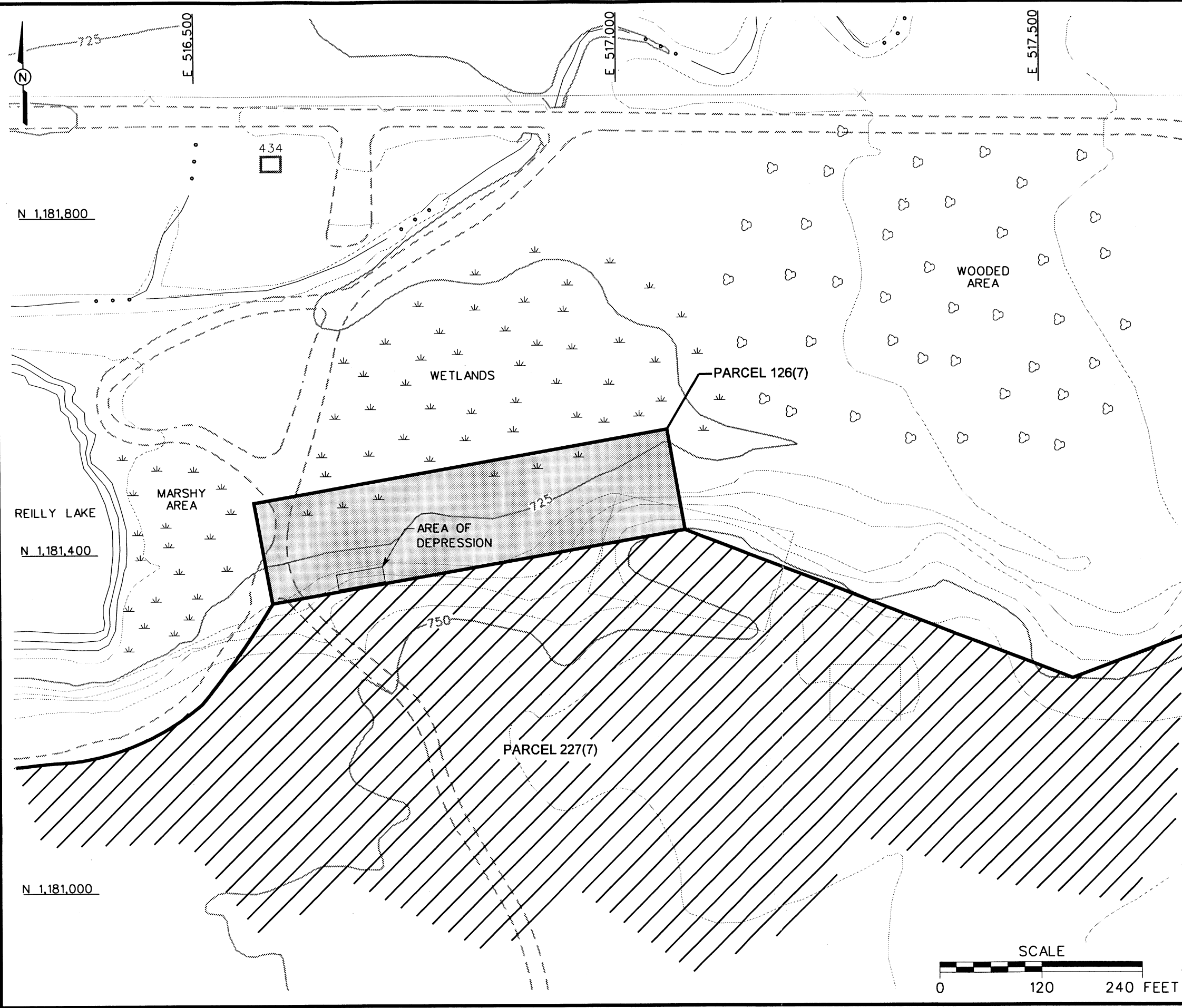


FIGURE 1-1
SITE LOCATION MAP
POST GARBAGE DUMP NORTH
OF REILLY AIRFIELD
PARCEL 126(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018





LEGEND

- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- BUILDING
- TOPOGRAPHIC CONTOURS
- TREES / TREELINE
- MARSH / WETLANDS
- PARCEL BOUNDARY
- BRIDGE
- CULVERT WITH HEADWALL
- SURFACE DRAINAGE / CREEK
- FENCE
- EXTENT OF PARCEL 227(7)

FIGURE 1-2
SITE MAP
POST GARBAGE DUMP NORTH OF
REILLY AIRFIELD
PARCEL 126(7)
U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018
IT **INTERNATIONAL**
TECHNOLOGY
CORPORATION

elevation is approximately 725 to 755 feet above sea level as established by the National Geodetic Vertical Datum (NGVD). Figure 1-2 is a site map showing topographic features and the site boundaries.

The soil type at the Post Garbage Dump site is Montevallo. The Montevallo soil type is characterized by severely eroded, shaly silty clay soils. These soils are formed either by erosional forces, surface runoff, or natural reworking processes. Colors are typically yellowish-brown. The depth to bedrock is usually 1.5 feet or greater, while the depth to groundwater is typically 20 feet or greater. The high erosion hazard, low capacity for available moisture, and thin root zone make this soil unsuited for cultivation (U.S. Department of Agriculture, 1961).

A public water source well for recreational use is located at Reilly Lake, west of the Post Garbage Dump site. This well has been labeled S02 (Moser and DeJarnette, 1992), No. 79 (Scott et al., 1987) and No. 14 (Planert, and Pritchett, 1989). Little information was found concerning this well; however, the following table lists the available information.

Reilly Lake

Reference	No.	Geographic Coordinate No.	Owner	Type	Drilled By	Well Depth	Well Diameter (inches)	Water Bearing Unit	Altitude (feet)	Water Level feet bgs)	Date Measured
Moser Scott Planert	S02; 79; 14	Lat. 334553 Lon. 085465	U.S. Army	----	----	----	6	Rome Formation	720	3.7 8.8	7-10-85 2-24-88

It is suspected that there is little additional information (e.g., lithology, etc.) available for well S02, 79, 14.

Parcel 126(7) was located incorrectly in the environmental baseline study (ESE, 1998). This parcel has been relocated based on the information provided by Lisa Kingsbury, FTMC, and Chris Johnson, ADEM. Figures included in this Final SFSP show the revised location.

1.3 Scope of Work

The scope of work for activities associated with the SI at the Post Garbage Dump, specified in the statement of work (USACE, 1998), includes the following tasks:

- Develop the SFSP attachment.
- Develop the SSHP attachment.

- Perform a geophysical survey to determine the location and extent of the fill area.
- Collect three surface soil, three subsurface soil, three surface water, three groundwater, three depositional soil, and three sediment samples to determine whether PSSCs are present at the Post Garbage Dump and provide data to determine future planned corrective measures and closure activities.

Upon completion of the field activities and sample analyses, draft and final summary reports will be prepared in accordance with current U.S. Environmental Protection Agency (EPA) Region IV and the Alabama Department of Environmental Management (ADEM) requirements.

The summary reports for Parcel 126(7) and Parcel 227(7) will be combined because it appears the Parcel 126(7) is an extension of Parcel 227(7) and both parcels will be investigated jointly.

2.0 Summary of Existing Environmental Studies

Environmental Science and Engineering, Inc. (ESE) conducted an environmental baseline survey (EBS) to document current environmental conditions of all FTMC property (ESE, 1998). The study identified sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance on fast track cleanup at closing installations. The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria.

1. Areas where no storage, release, or disposal (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action underway.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the Community Environmental Response Facilitation Act (CERFA) (CERFA-Public Law 102-426) protocols and DOD policy regarding contamination assessment. Record searches and reviews were performed on all reasonably available documents from FTMC, ADEM, EPA Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and Resource Conservation and Recovery Act-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, visual site inspections were conducted to verify conditions of specific property parcels. The Former Post Garbage Dump was identified as a site where further evaluation was needed.

The Post Garbage Dump consists of one site only. A map entitled *Master Plan, Fort McClellan, General Utilities Map, Electrical* (Office of the Post Engineer, December 1946) identifies a "Post Garbage Dump" north of Reilly Airfield and east of Reilly Lake. The precise location of

this site is not clearly identified on the map, and it is not certain that this site was ever used as a dump or landfill; the location may have been for planning purposes. Mr. Bill Garland speculated that disposal of trash would have been convenient here because of a pronounced bluff at this location. Members of the EBS field team visited this area and observed waste material in the approximate location of the parcel. Other evidence of disposal operations was not observed. Other information regarding this site, dates of use, or its operation is not available. To the best of IT's knowledge, this parcel has not been the subject of any environmental investigation or remediation.

3.0 Site-Specific Data Quality Objectives

3.1 Overview

The data quality objectives (DQO) process is followed to evaluate data requirements and to support the decision-making process associated with the action selection for the Post Garbage Dump. This section incorporates the components of the DQO process described in the 1993 EPA publication EPA 540-R-93-071 *Data Quality Objectives for Superfund* (EPA, 1993). The DQO process as applied to the Post Garbage Dump is described in more detail in Sections 3.2 and 4.3 of the WP. Table 3-1 provides a summary of the factors used to determine the appropriate quantity of samples, and procedures to meet the objectives of the SI, and to establish a basis for future action at this site.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with Corps of Engineers South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

3.2 Data Users and Available Data

The intended data users and available data related to the site investigation at the Post Garbage Dump are presented in Table 3-1 and have been used to formulate a site-specific conceptual model. A conceptual site exposure model (CSEM) was developed to support the development of this SFSP, which is necessary to meet the objectives of these activities and to establish a basis for future action at the site. The data users for information generated during field activities are primarily the EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work.

3.3 Conceptual Site Exposure Model

The conceptual site exposure model (CSEM) provides the basis for identifying and evaluating the potential risks to human health in the risk assessment. Graphically presenting all possible

Table 3-1

Summary of Data Quality Objectives
Post Garbage Dump North of Reilly Airfield, Parcel 126(7)
Fort McClellan, Calhoun County, Alabama

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA ADEM USACE DOD IT Corporation Other Contractors Possible future land users	None	Contaminant Source Fuels and fuel components Waste oils, Metals	Soils Groundwater	SI to confirm or deny the presence of contaminants in the site media and locate source areas, if present. Obtain sufficient data to support, as appropriate the following: <ul style="list-style-type: none"> Screening level risk assessment Implementing an immediate response. No further action. Proceedings with a RI. 	Surface Soil TCL-VOCs TCL-SVOCs TAL-metals CI Pesticides OP Pesticides CI Herbicides PCBs	Definitive + CESAS Level B data package	3 direct-push samples
		Migration Pathways Infiltration and leaching to subsurface soil and groundwater, erosion and runoff to surface water and sediment, and dust emissions and volatilization to ambient air, groundwater discharge to surface water	Surface Water Sediments		Subsurface Soil TCL-VOCs TCL-SVOCs TAL-metals CI Pesticides OP Pesticides CI Herbicides PCBs	Definitive + CESAS Level B data package	3 direct-push + QC
		Potential Receptors Future groundskeeper Future construction worker Future resident Current and future recreational site user	Depositional Soil		Groundwater TCL-VOCs TCL-SVOCs TAL-Metals CI Pesticides OP Pesticides CI Herbicides PCBs	Definitive + CESAS Level B data package	3 direct-push + QC
		ESSCs Fuels Fuel components Waste oils Organics Metals			Surface Water TCL-VOCs TCL-SVOCs TAL-Metals CI Pesticides OP Pesticides CI Herbicides PCBs	Definitive + CESAS Level B data package	3 bottle-collected samples + QC
					Sediments TCL-VOCs TCL-SVOCs TAL-Metals TOC Grain Size - ASTM CI Pesticides OP Pesticides CI Herbicides PCBs	Definitive + CESAS Level B data package	3 hand-collected samples + QC

ADEM - Alabama Department of Environmental Management. ASTM - American Society for Testing and Materials. CESAS - Civil Engineering South Atlantic Savannah (U.S. Army Corps of Engineers). CI - Chlorinated. DOD - U.S. Department of Defense.	EPA - U.S. Environmental Protection Agency. OP - Organophosphorus. PCB - Polychlorinated biphenyl. PSSC - Potential site-specific chemicals. QC - Quality control.	SVOC - Semivolatile organic compound. TAL - Target analyte list. TOC - Total organic carbon. TCL - Target compound list. USACE - U.S. Army Corps of Engineers. VOC - Volatile organic compound.
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pathways by which a potential receptor may be exposed, including all sources, release and transport pathways, and exposure routes, facilitates consistent and comprehensive evaluation of risk to human health, and helps to ensure that potential pathways are not overlooked. The elements necessary to construct a complete exposure pathway and develop the CSEM include:

- Contaminant sources
- Contaminant release mechanisms
- Source mediums
- Contaminant transport pathways
- Exposure pathways
- Potential receptors.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact with a contaminated source medium.

Although potential contamination at the Post Garbage Dump is unknown because it is unclear whether the site was ever used for disposal, potential site-specific chemicals (PSSC) at this site may include fuels and fuel components, waste oils, organic chemicals, and possibly metals. If petroleum products were disposed in the fill area, then they would be one of the more mobile and detectable contaminants of potential concern. If contaminant release occurred, then initially it probably entered surface and subsurface soil.

Potential contaminant transport pathways include infiltration to subsurface soil, infiltration and leaching to groundwater, erosion runoff and groundwater discharge to surface water and sediment in Reilly Lake. Additional potential pathways include dust emissions and volatilization from soil and surface water to air.

Current site use is best described as open land. Plausible receptors under current site use scenarios are limited to the recreational site user which included fishermen in the wetlands north of the site. Other potential receptors considered, but not included under current site use scenarios, are the:

- Groundskeeper: The site is unused, overgrown with brush and trees and is not maintained.
- Construction worker: The site is unused, and no development or building is occurring or scheduled.
- Resident: The site is not currently used for residential development.

As described in the FTMC comprehensive reuse plan, future plans call for the site to continue as open space. It will serve as a buffer between two industrial areas (FTMC, 1997). The recreational site user, including the fisherman, continues as the most plausible receptor under the future site-use scenario. However, the site could be used for industrial purposes. The resident, fish consumption, groundskeeper, and construction worker receptors are also considered under the future use scenario. The venison consumption scenario is excluded as implausible, given the size and nature of the area.

The contaminant release and transport mechanisms, source and exposure media, receptors, and exposure pathways are summarized in Figure 3-1 and Table 3-1.

3.4 Decision-Making Process, Data Uses, and Needs

The decision-making process consists of a seven-step process that is presented in detail in Sections 3.2 and 4.3 of the WP and will be followed during the SI at the Post Garbage Dump. Data uses and needs are summarized in Table 3-1.

3.4.1 Risk Evaluation

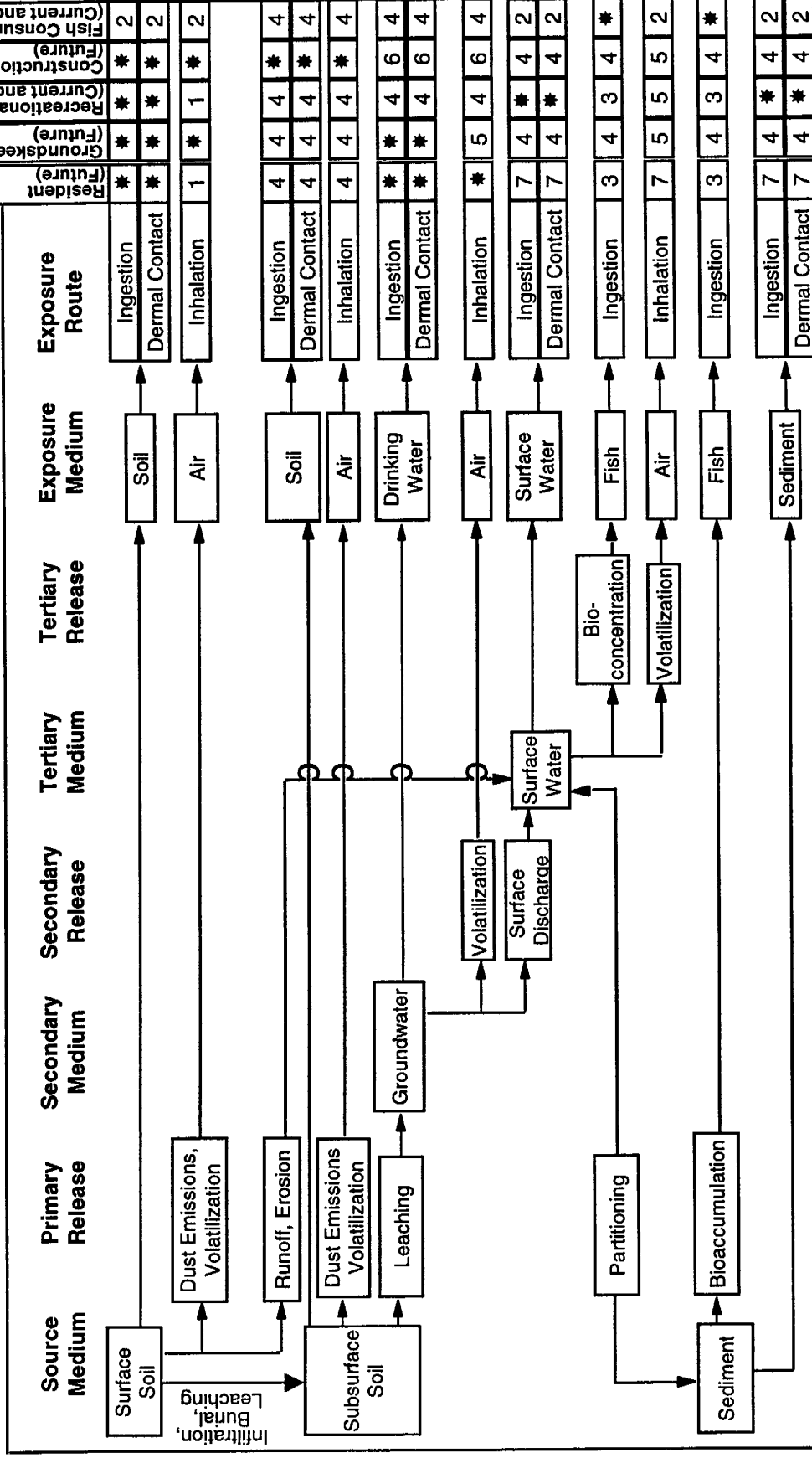
Confirmation of contamination at the Post Garbage Dump will be based upon a comparison of detected site contaminant concentrations to the site-specific screening levels developed in the installation-wide WP. EPA definitive data with CESAS Level B data packages will be used to achieve detection limits sufficient to determine whether or not the established guidance criteria are exceeded in site media. Definitive data will be adequate for confirming the presence of site contamination and for supporting additional decision-making steps, such as remedial action and risk assessment, if necessary.

3.4.2 Data Types and Quality

To meet the objectives of the SI at the Post Garbage Dump, it will be necessary to sample and analyze surface and subsurface soils, surface water, groundwater, sediment, and depositional soils. As described in Chapter 4.0 of this SFSP, quality assurance/quality control (QA/QC) samples will be collected for all sample types. Samples will be analyzed by EPA-approved SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

Figure 3-1

Human Health Conceptual Site Exposure Model for the Post Garbage Dump North of Reilly Airfield, Parcel 126(7) Fort McClellan, Alabama



* = Complete exposure pathway quantified in SSSL development.

1 = Volatilization from undisturbed surface soil deemed insignificant; soil is likely to be paved or vegetated, reducing dust emissions to insignificant levels; inhalation pathway not quantified.

2 = This scenario is created to assess indirect (food chain) exposure to surface soil, surface water and sediment.

3 = Evaluated under fish consumption scenario.

4 = Incomplete exposure pathway.

5 = Although theoretically complete, this pathway is judged to be insignificant.

6 = Although theoretically complete, these pathways are not quantified for the construction worker because SSSLs developed for the groundskeeper would be at least as restrictive.

7 = Although theoretically complete, SSSLs for these pathways are developed only for the recreational site user. SSSLs developed for the recreational site user may be used to estimate risk for this receptor.

3.4.3 Precision, Accuracy, and Completeness

Laboratory requirements of precision, accuracy, and completeness for this SI are provided in Chapter 9.0 of the QAP.

4.0 Field Activities

4.1 Utility Clearances

Prior to performing any intrusive sampling, a utility clearance will be performed at all locations where soil and groundwater samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP. The site manager will mark the proposed locations with stakes, coordinate with the installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are cleared, the stakes will be labeled as cleared.

4.2 Geophysical Survey

A surface geophysical survey will be conducted over the Post Garbage Dump to determine the boundaries of the fill areas, and to locate the proposed sample locations within the proper area of concern. The geophysical methods to be used include magnetics, frequency-domain electromagnetic (EM) induction, and ground-penetrating radar (GPR). These combined methods offer the best approach to screening sites for buried metallic debris, a common component of most landfill operations.

4.2.1 Methodology and Instrumentation

The magnetic surveys will be conducted using a Geometrics G-858G magnetic gradiometer (for collecting survey data) and a Geometrics G-856AX magnetometer or equivalent (for collecting base station data). Frequency-domain EM surveys will be conducted using a Geonics EM31 terrain conductivity meter, coupled to an Omnidata DL720 digital data logger. The GPR survey will be conducted using a Geophysical Survey Systems Inc. System-2P or equivalent, coupled to either 200- or 400-megahertz antennas, depending on site conditions and signal attenuation. If required, a Metrotech 9860-NRL EM utility locator or equivalent, will be used confirm the presence or absence of metallic subsurface utilities, which may be evident as linear anomalies in the EM31 contour maps.

Geophysical survey procedures to be used to conduct the investigation, including survey control, equipment calibration, field base station and data validation, data processing and interpretation, and file tracking procedures, will be in accordance with the methods and procedures outlined in Chapter 4.0 of the installation-wide SAP and the following IT standard operating procedures for geophysical investigations:

- ITGP-001: Surface Magnetic Surveys
- ITGP-002: Surface Frequency-Domain EM Surveys

- ITGP-003: GPR Surveys
- ITGP-005: Global Positioning System (GPS) System Surveys.

The following tasks will be performed prior to conducting the survey:

- Review existing site surface and subsurface information (e.g., aerial photographs, utility maps, boring logs, etc.).
- Evaluate the potential influence of cultural features (e.g., overhead and subsurface utilities, fences, buildings, etc.).
- Conduct a visual inspection of the sites to verify the likely location of the former dump area.
- Conduct reconnaissance scans across the general area of the sites with the magnetic and/or EM instruments to determine whether geophysical anomalies exist within the proposed survey areas and/or near the proposed boundaries. The geophysical survey area boundaries for each site will be chosen in the field based on these results.

Following visual inspection of the sites and evaluation of reconnaissance scans with the instruments, base grids will be staked throughout each site such that the resolution objectives of the investigation are achieved (typically 50- to 100-foot centers). The base grids will be established using either a GPS or conventional civil surveying techniques. The geophysics base grids will be referenced to the Alabama State Plane Coordinate System. Using the base grids as a reference, the geophysics crew will mark control points on 20-foot centers throughout each site with surveyor's paint and/or plastic pin flags. To the extent possible, the grids will be oriented in the north to south (N-S) direction. If vegetation or surface metal is present, it shall be removed where necessary prior to collecting geophysical data.

After the survey grids are complete and control points are marked, all surface objects that could potentially affect the geophysical data (e.g., surface metal, variations in topography, overhead utilities, etc.) will be mapped using the GPS so that anomalies caused by these objects can be correctly interpreted.

Geophysical data processing will be completed in the field following the survey. The EM and magnetic data will be presented as color-enhanced contour maps to facilitate recognition of subtle anomalies. Geophysical anomalies will be field-checked to verify their source as either surface culture or subsurface objects/debris. Surface source materials responsible for the

observed geophysical anomalies will be documented on the contour maps. Digital GPR data will be collected where necessary to aid with interpreting anomalies seen in the EM and magnetic data maps.

The conclusions from the geophysical survey at Parcel 126(7) will be incorporated into the SI report. Geophysical results will be used to properly position the proposed sample locations at Parcel 126(7).

4.2.2 Areal Coverage

Parcel 126(7) geophysical surveys will encompass an area of approximately 500 feet by 120 feet. However, the geophysical survey will be conducted at the same time as the geophysical survey proposed for Parcel 227(7). The following is a list of steps that will be performed at the site:

- G-858G magnetic gradiometer data will be collected at 0.5-second intervals (approximate 2.0- to 2.5-foot intervals) along N-S oriented survey lines spaced 10 feet apart.
- EM31 survey data will be collected at 5-foot intervals along N-S and east to west (E-W) oriented survey lines spaced 10 feet apart.
- GPR profile data will be collected to further characterize anomalies seen in the magnetic and/or EM data. The orientation and length of the GPR lines will be chosen in the field to yield the most usable results.
- In areas of the site where linear EM31 anomalies potentially representing pipelines/utilities are observed in the contoured data, the lines will be verified with the Metrotech 9860-NRL EM utility locator. Verification is necessary since the anomalous response caused by subsurface utilities may sometimes be mistaken for large buried metal objects. The locations of interpreted pipelines will be marked in the field with paint and placed on the site map.

4.3 Environmental Sampling

The environmental sampling program during the SI at the Post Garbage Dump includes the collection of surface and subsurface soil, surface water, groundwater, sediment, and depositional soil samples for chemical analysis. Field sample locations will be based on field observations and the results of the geophysical survey.

4.3.1 Surface Soil Sampling

Surface soil samples will be collected at the following locations.

4.3.1.1 Sample Locations and Rationale

The surface soil sampling rationale is presented in Table 4-1. A total of three surface soil samples will be collected at the Post Garbage Dump. The proposed surface soil sampling locations are presented on Figure 4-1.

4.3.1.2 Sample Collection

Surface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. Three surface soil samples will be collected from direct-push sampling locations as specified in Section 4.7.1.1 of the SAP. Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

4.3.2 Subsurface Soil Sampling

Subsurface soil samples will be collected from the same locations as the surface soil samples described in Section 4.2.1.

4.3.2.1 Sample Locations and Rationale

The subsurface soil sampling rationale is presented in Table 4-1. A total of three subsurface soil samples will be collected from the Post Garbage Dump. The proposed subsurface soil sampling locations are presented on Figure 4-1.

4.3.2.2 Sample Collection

Subsurface soil samples will be collected from soil borings at depths greater than 1 foot below ground surface in the unsaturated zone. Direct-push sampling methodology, provided in Section 4.7.1.1 of the SAP, will be utilized to advance the soil borings and collect the soil samples.

Soil samples will be collected continuously for the first 12 feet or until either groundwater or refusal is reached. A detailed lithological log will be recorded by the on-site geologist for each borehole. At least one subsurface sample from each borehole will be selected for analyses. The collected subsurface soil samples will be field-screened using a photoionization detector (PID) in accordance with Section 4.15 of the SAP to measure samples exhibiting elevated readings above background. Typically, the subsurface soil sample showing the highest reading will be selected and sent to the laboratory for analysis. If none of the samples indicate readings above background (readings in ambient air) using the PID, the deepest interval from the soil boring will be sampled and submitted to the laboratory for analysis. Subsurface soil samples will be selected

Table 4-1

Site Sampling Rationale
Post Garbage Dump North of Reilly Airfield, Parcel 126(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Media	Sample Location Rationale
FTA-126-GP01	Surface soil Subsurface soil Groundwater	Direct-push samples will be collected at the west end of Parcel 126, near the toe of the slope to determine soil or groundwater quality.
FTA-126-GP02	Surface soil Subsurface soil Groundwater	Direct-push samples will be collected at the middle of Parcel 126, to determine if fill material is present and to evaluate soil and groundwater quality.
FTA-126-GP03	Surface soil Subsurface soil Groundwater	Direct-push samples will be collected at the east end of Parcel 126, at the top of the slope to determine soil and groundwater quality.
FTA-126-SW/SD01	Surface water Sediment	Samples will be collected from the stream at the base of the slope, immediately north of Parcel 126 and at the west end of the parcel. Sampling location represents a lower elevation area where surface water runoff could collect, and impact surface water bodies.
FTA-126-SW/SD02	Surface water Sediment	Samples will be collected from the stream sediment at the base of the slope at the west end of Parcel 126. Sampling location represents a lower elevation area where surface water runoff could deposit contaminants into stream sediment.
FTA-126-SW/SD03	Surface water Sediment	Samples will be collected from the stream at the base of the slope near the middle of the parcel. Sampling location represents a lower elevation area where surface water runoff could collect, and impact surface water bodies.
FTA-126-DP01	Depositional Soils	Samples will be collected from the stream sediment at the base of the slope at the middle of Parcel 126. Sampling location represents a lower elevation area where surface water runoff could deposit contaminants into stream sediment.
FTA-126-DP02	Depositional Soils	Samples will be collected from the stream at the base of the slope at the east end of the parcel. Sampling location represents a lower elevation area where surface water runoff could collect, and impact surface water bodies.
FTA-126-DP03	Depositional Soils	Samples will be collected from the stream sediment at the base of the slope at the east end of Parcel 126. Sampling location represents a lower elevation area where surface water runoff could deposit contaminants into stream sediment.
		Samples will be collected from the depositional soils at the base of the slope at the west end of Parcel 126. Sampling location represents a lower elevation area where contaminant could be deposited by surface runoff or soil slope sloughing.
		Samples will be collected from the depositional soils at the base of the slope at the middle of Parcel 126. Sampling location represents a lower elevation area where contaminant could be deposited by surface runoff or soil slope sloughing.
		Samples will be collected from the depositional soils at the base of the slope at the east end of Parcel 126. Sampling location represents a lower elevation area where contaminant could be deposited by surface runoff or soil slope sloughing.

N/A - Not applicable.

02 OCT 98

STARTING DATE: 04/30/98

DATE LAST R.:

DRAFT. CHCK. BY:

DWG. NO.: /4645es.021

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DRAWN BY: D. BILLINGSLEY

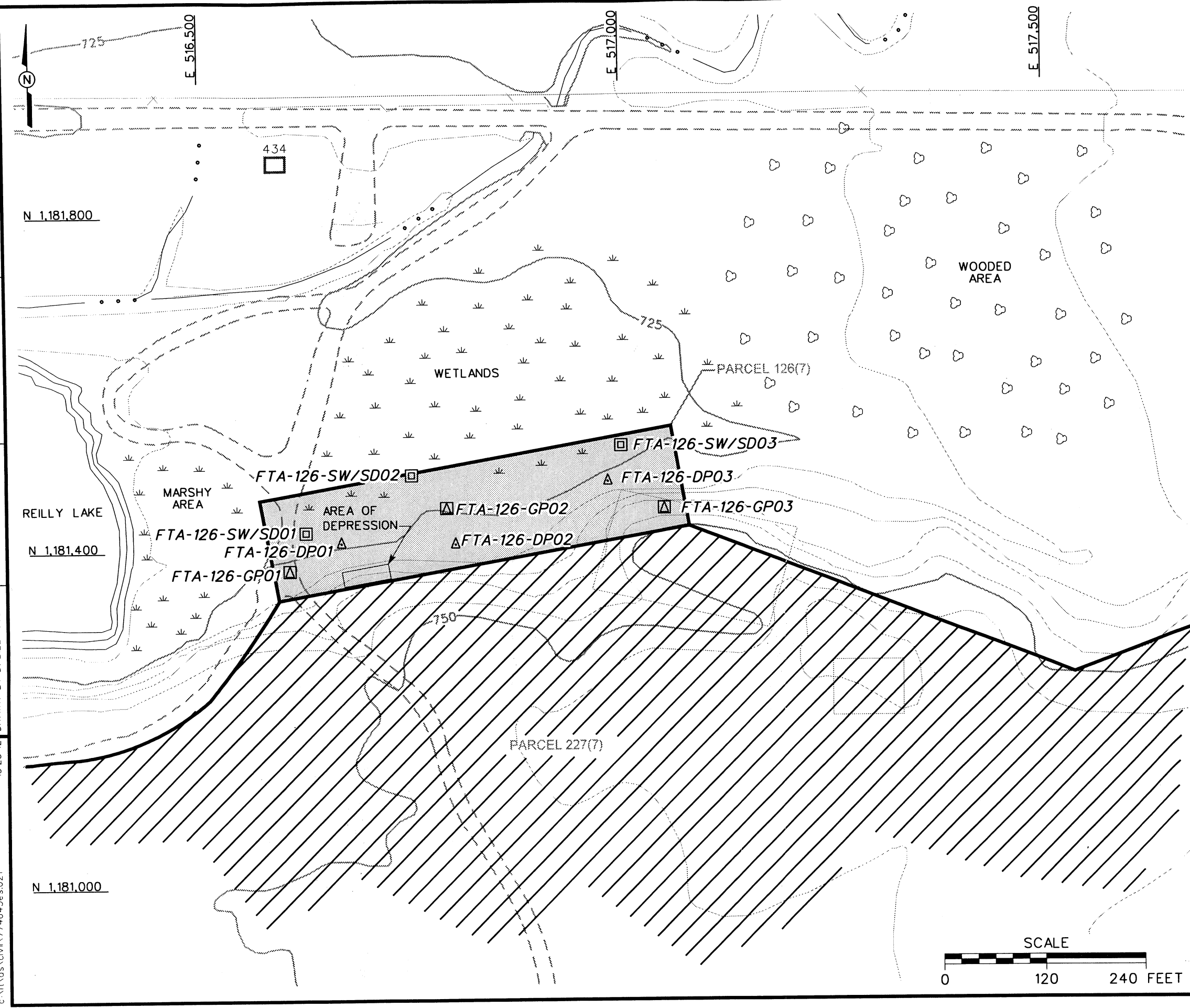
ENGR. CHCK. BY: A. MAYILA

PROJ. MGR.: J. YACOB

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- LEGEND
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS
 - TREES / TREELINE
 - MARSH / WETLANDS
 - PARCEL BOUNDARY
 - BRIDGE
 - CULVERT WITH HEADWALL
 - SURFACE DRAINAGE / CREEK
 - FENCE
 - EXTENT OF PARCEL 227(7)
 - PROPOSED SURFACE WATER/SEDIMENT SAMPLE
 - PROPOSED GROUNDWATER, SURFACE AND SUBSURFACE SOIL SAMPLE
 - PROPOSED DEPOSITIONAL SOIL SAMPLE

FIGURE 4-1

PROPOSED SAMPLE LOCATIONS
POST GARBAGE DUMP NORTH OF
REILLY AIRFIELD
PARCEL 126(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

IT

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TECHNOLOGY
CORPORATION

Table 4-2

Surface, Subsurface, and Depositional Soil Sample Designations and QA/QC Sample Quantities
Post Garbage Dump North of Reilly Airfield, Parcel 126(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-126-GP01	FTA-126-GP01-SS-EF0001-REG FTA-126-GP01-DS-EF0002-REG	0-1.0 a				TCL VOCs, TCL SVOCs, Cl Pesticides, PCBs, OP Pesticides, Cl Herbicides, TAL Metals
FTA-126-GP02	FTA-126-GP02-SS-EF0003-REG FTA-126-GP02-DS-EF0004-REG	0-1.0 a				TCL VOCs, TCL SVOCs, Cl Pesticides, PCBs, OP Pesticides, Cl Herbicides, TAL Metals
FTA-126-GP03	FTA-126-GP03-SS-EF0007-REG FTA-126-GP03-DS-EF0008-REG	0-1.0 a		FTA-126-GP02-DS-EF0005-FD	FTA-126-GP03-SS-EF0007-MS	TCL VOCs, TCL SVOCs, Cl Pesticides, PCBs, OP Pesticides, Cl Herbicides, TAL Metals
FTA-126-DEP01	FTA-126-DEP01-DP-EF0009-REG	0-1.0			FTA-126-GP03-SS-EF0007-MSD	TCL VOCs, TCL SVOCs, Cl Pesticides, PCBs, OP Pesticides, Cl Herbicides, TAL Metals
FTA-126-DEP02	FTA-126-DEP02-DP-EF0010-REG	0-1.0				TCL VOCs, TCL SVOCs, Cl Pesticides, PCBs, OP Pesticides, Cl Herbicides, TAL Metals
FTA-126-DEP03	FTA-126-DEP03-DP-EF0011-REG	0-1.0				TCL VOCs, TCL SVOCs, Cl Pesticides, PCBs, OP Pesticides, Cl Herbicides, TAL Metals

^a Actual sample depth selected for analysis will be at the discretion of the on-site geologist and will be based on field observation and the results of the geophysical survey.

Cl - Chlorinated	SVOC - Semivolatile organic compound
MS/MSD - Matrix spike/matrix spike duplicate	TAL - Target analyte list
OP - Organophosphorus	TAL - Target analyte list
PCB - Polychlorinated biphenyl	TCL - Target compound list
QA/QC - Quality assurance/quality control	VOC - Volatile organic compound

for analyses from any depth interval if the on-site geologist suspects PSSC at the interval. Site conditions such as lithology may also determine the actual sample depth interval submitted for analyses. More than one subsurface soil sample will be collected if field measurements and observations indicate a possible layer of PSSC and/or additional sample data would provide insight to the existence of any PSSC.

4.3.3 Groundwater Sampling

Groundwater samples will be collected from the same locations as the surface and subsurface soil samples described in Sections 4.2.1 and 4.2.2.

4.3.3.1 Sample Locations and Rationale

The groundwater sampling rationale is presented in Table 4-1. A total of three groundwater samples will be collected from the Post Garbage Dump.

4.3.3.2 Sample Collection

The groundwater sample designations, depths, and required QA/QC sample quantities are listed in Table 4-3. Groundwater samples will be collected in accordance with the procedures and methods specified in Section 4.7.1.1 of the SAP. Direct-push temporary wells will be completed in the water table (to a depth where sufficient water is encountered) to collect a groundwater sample. The temporary wells will be completed in the installed soil borings described in Sections 4.3.1 and 4.3.2. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Chapter 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

4.3.4 Surface Water Sampling

Surface water samples will be collected from the wetland area located north of the site.

4.3.4.1 Sample Locations and Rationale

The surface water sampling rationale is presented in Table 4-1. A total of three surface water samples will be collected from the Post Garbage Dump. The proposed surface water sampling locations are presented on Figure 4-1.

4.3.4.2 Sample Collection

The surface water samples will be collected using the equipment and collection procedures described in detail in Section 4.9.1.3 of the SAP. The surface water sample designations, depths, and required QA/QC sample quantities are listed in Table 4-4. Sample containers, sample

Table 4-3

Groundwater Sample Designations and QA/QC Sample Quantities
Post Garbage Dump North of Reilly Airfield, Parcel 126(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-126-GP01	FTA-126-GP01-GW-EF3001-REG	Water Table ^a				TCL VOCs, TCL SVOCs, CI Pesticides, PCBs, OP Pesticides, CI Herbicides, Total TAL Metals
FTA-126-GP02	FTA-126-GP02-GW-EF3002-REG	Water Table ^a	FTA-126-GP02-GW-EF3003-FD	FTA-126-GP02-GW-EF3004-FS		TCL VOCs, TCL SVOCs, CI Pesticides, PCBs, OP Pesticides, CI Herbicides, Total TAL Metals
FTA-126-GP03	FTA-126-GP03-GW-EF3005-REG	Water Table ^a			FTA-126-GP03-GW-EF3005-MS	TCL VOCs, TCL SVOCs, CI Pesticides, PCBs, OP Pesticides, CI Herbicides, Total TAL Metals
					FTA-126-GP03-GW-EF3005-MSD	TCL VOCs, TCL SVOCs, CI Pesticides, PCBs, OP Pesticides, CI Herbicides, Total TAL Metals

^a Temporary well will be installed at a depth where sufficient first water is encountered to collect a groundwater sample.

CI - Chlorinated

MS/MSD - Matrix spike/matrix spike duplicate

OP - Organophosphorus

PCB - Polychlorinated biphenyl.

QA/QC - Quality assurance/quality control

SVOC - Semivolatile organic compound

TAL - Target analyte list

TCL - Target compound list

VOC - Volatile organic compound

Table 4-4

Surface Water and Sediment Sample Designations and QA/QC Sample Quantities
Post Garbage Dump North of Reilly Airfield, Parcel 126(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-126-SW/SD01	FTA-126-SW/SD01-SW-EF2001-REG	NA				TCL VOCs, TCL SVOCs, CI Pesticides, PCBs, OP Pesticides, CI Herbicides, TAL Metals
	FTA-126-SW/SD01-SD-EF1001-REG	0 - 0.5				TCL VOCs, TCL SVOCs, CI Pesticides, PCBs, OP Pesticides, CI Herbicides, TAL Metals, TOC, Grain Size
FTA-126-SW/SD02	FTA-126-SW/SD02-SW-EF2004-REG	NA				TCL VOCs, TCL SVOCs, CI Pesticides, PCBs, OP Pesticides, CI Herbicides, TAL Metals
	FTA-126-SW/SD02-SD-EF1002-REG	0 - 0.5				TCL VOCs, TCL SVOCs, CI Pesticides, PCBs, OP Pesticides, CI Herbicides, TAL Metals, TOC, Grain Size
FTA-126-SW/SD03	FTA-126-SW/SD03-SW-EF2005-REG	NA				TCL VOCs, TCL SVOCs, CI Pesticides, PCBs, OP Pesticides, CI Herbicides, TAL Metals
	FTA-126-SW/SD03-SD-EF1003-REG	0 - 0.5				TCL VOCs, TCL SVOCs, CI Pesticides, PCBs, OP Pesticides, CI Herbicides, TAL Metals, TOC, Grain Size

CI - Chlorinated.

MS/MSD - Matrix spike/matrix spike duplicate.

NA - Not applicable.

OP - Organophosphorus.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

TOC - Total organic carbon.

VOC - Volatile organic compound.

volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Chapter 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

4.3.5 Sediment Sampling

Sediment samples will be collected from the same locations as the surface water samples described in Section 4.2.4.

4.3.5.1 Sample Locations and Rationale

The sediment sampling rationale is presented in Table 4-1. A total of three sediment samples will be collected from the wetlands of the intermittent stream located north of the Post Garbage Dump. The proposed sediment sampling locations are presented on Figure 4-1.

4.3.5.2 Sample Collection

The sediment samples will be collected using the equipment and procedures described in Section 4.9.1.2 of the SAP. The sediment sample designations, depths, and required QA/QC sample quantities are listed in Table 4-4. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Chapter 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

4.3.6 Depositional Soil Sampling

Depositional soil samples will be collected at the Post Garbage Dump site.

4.3.6.1 Sample Locations and Rationale

The depositional soil sampling rationale is presented in Table 4-1. A total of three depositional soil samples will be collected from the base of the slope at the Post Garbage Dump site. The proposed depositional soil sampling locations are presented on Figure 4-1.

4.3.6.2 Sample Collection

As specified in Section 4.9.1.1 of the SAP, the depositional soil samples will be collected from soil depths of less than 1 foot using a hand auger. The depositional soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Chapter 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

4.4 Decontamination Requirements

Decontamination will be performed on sampling and nonsampling equipment primarily to ensure that contaminants are not introduced into samples from location to location. Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP. Decontamination of nonsampling equipment will be performed in accordance with the requirements presented in Section 4.9.1.2 of the SAP.

4.5 Surveying of Sample Locations

Sampling locations will be marked with pin flags, stakes, and/or flagging and will be surveyed using either GPS or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the Alabama State Plane coordinate system, 1983 North American Datum (NAD83). Elevations will be referenced to the NGVD of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Horizontal coordinates for all soil, sediment, and surface water locations will be recorded using GPS to provide accuracy within 1 meter. Because of the need to use temporary wells to determine water levels, a higher level of accuracy is required. Temporary wells will be surveyed to an accuracy of 0.1 foot for horizontal coordinates and 0.01 foot for elevations, using survey-grade GPS techniques and/or conventional civil survey techniques, as required.

Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.

4.6 Analytical Program

Samples collected at the locations specified in this chapter of this SFSP will be analyzed for the specific suites of chemicals and elements based on the history of site usage, as well as EPA, ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the site consist of the following analytical suite:

- TCL VOCs – Method 5035/8260B
- TCL SVOCs – Method 8270C
- TAL Metals – Method 6010B/7000
- PCBs – Method 8082
- Chlorinated Herbicides – Method 8151A
- Chlorinated Pesticides – Method 8081A
- Organophosphorus Pesticides – Method 8141A.

In addition, the sediment samples will be analyzed for the following list of parameters:

- Total Organic Carbon – Method 9060
- Grain Size – American Society for Testing and Materials D-421/D-422.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-5 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using CLP-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

4.7 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping will follow the procedures as specified in Section 4.13.2 of the SAP. Completed analysis request/chain-of-custody records will be secured and included with each shipment of coolers to:

Sample Receiving
Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Telephone: (423) 588-6401.

Split samples collected for the USACE laboratory will be shipped to the following address:

Sample Receiving
USACE South Atlantic Division laboratory
611 South Cobb Drive
Marietta, Georgia 30060-3112
Telephone: (770) 421-5295.

4.8 Investigation-Derived Waste Management

Management and disposal of the investigation-derived wastes (IDW) will follow procedures and requirements as described in Section 4.11 and Appendix D of the SAP. The IDW expected to be generated at the Post Garbage Dump will include decontamination fluids and disposable personal protective equipment. The IDW will be staged inside the fenced area surrounding Buildings 335 and 336 while awaiting final disposal.

Table 4-5

**Analytical Samples - Post Garbage Dump North of Reilly Airfield, Parcel 126(7)
Fort McClellan, Calhoun County, Alabama**

Field Samples				QA/QC Samples ⁽¹⁾					Quanterra	QA Lab			
Parameters	Analysis Method	Sample Matrix	TAT Needed	No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Splits w/ QA Lab (10%)	MS/MSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)	Total No. Analysis	Total No. Analysis
Post Garbage Dump North of Reilly Airfield - Parcel 126(7): 6 water matrix (3 groundwater, 3 surface water); 12 soil matrix (3 surface, 3 subsurface, 3 sediment, 3 depositional soil)													
TCL VOCs	8260B	water	normal	6	1	6	1	1	1	1	1	11	1
TCL SVOCs	8270C	water	normal	6	1	6	1	1	1	1	1	10	1
Cl Pesticides	8081A	water	normal	6	1	6	1	1	1	1	1	10	1
PCBs	8082	water	normal	6	1	6	1	1	1	1	1	10	1
OP Pesticides	8141A	water	normal	6	1	6	1	1	1	1	1	10	1
Cl Herbicides	8151A	water	normal	6	1	6	1	1	1	1	1	10	1
Tot TAL Metals	6010B/7000	water	normal	6	1	6	1	1	1	1	1	10	1
TCL VOCs	8260B	soil	normal	12	1	12	1	1	1	1	1	16	1
TCL SVOCs	8270C	soil	normal	12	1	12	1	1	1	1	1	16	1
Cl Pesticides	8081A	soil	normal	12	1	12	1	1	1	1	1	16	1
PCBs	8082	soil	normal	12	1	12	1	1	1	1	1	16	1
OP Pesticides	8141A	soil	normal	12	1	12	1	1	1	1	1	16	1
Cl Herbicides	8151A	soil	normal	12	1	12	1	1	1	1	1	16	1
TAL Metals	6010B/7000	soil	normal	12	1	12	1	1	1	1	1	16	1
Post Garbage Dump North of Reilly Airfield Total:												183	14

⁽¹⁾ Field duplicate, QA split, and MS/MSD samples were calculated as a percentage of the field samples collected per site and were rounded to the nearest whole number. Trip blank samples will be collected in association with water matrix samples for VOC analysis only. Assumed 4 field samples per day to estimate trip blanks. Equipment blanks will be collected once per event whenever sampling equipment is field decontaminated and re-used. They will be repeated weekly for sampling events that are anticipated to last more than one week. Assumed 20 field samples will be collected per week to estimate number of equipment blanks.

Ship samples to :	Quanterra Environmental Services	USACE Laboratory split samples	USACE South Atlantic Division Laboratory
	5815 Middlebrook Pike	are shipped to:	Attn: Sample Receiving
	Knoxville, Tennessee 37921		611 South Cobb Drive
	Attn: John Reynolds		Marietta, Georgia 30060-3112
	Tel: 423-588-6401 Fax: 423-584-4315		Tel: 770-919-5270

QA/QC - Quality assurance/quality control.
MS/MSD - Matrix spike/matrix spike duplicate.
VOC - Volatile organic compound.
SVOC - Semivolatile organic compound.
TAL - Target analyte list.
TCL - Target analyte list.

5.0 Project Schedule

The project schedule for all site investigation activities will be provided by the IT project manager to the Base Closure Team on a monthly basis.

6.0 References

Environmental Science and Engineering Inc. (ESE), 1998, *Final Environmental Baseline Survey, Fort McClellan, Alabama*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

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Site Investigation
Final
Site-Specific Field Sampling Plan Attachment
for the Training Aids Building (Building 267), Parcel 166(7)
Fort McClellan
Calhoun County, Alabama

Prepared for:

U.S. Army Corps of Engineers, Mobile District
109 St. Joseph Street
Mobile, Alabama 36602

Prepared by:

IT Corporation
312 Directors Drive
Knoxville, Tennessee 37923

Task Order CK005
Contract No. DACA21-96-D-0018
IT Project No. 774645

October 1998

Revision 1

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List of Acronyms

ADEM	Alabama Department of Environmental Management
CERFA	Community Environmental Response Facilitation Act
CESAS	Civil Engineering South Atlantic Savannah (U.S. Army Corps of Engineers)
CLP	Contract Laboratory Program
COC	chain of custody
CSEM	conceptual site exposure model
DOD	U.S. Department of Defense
DOE	Directorate of Environment
DQO	data quality objective
EBS	environmental baseline survey
EPA	U. S. Environmental Protection Agency
ESE	Environmental Sciences and Engineering, Inc.
FTMC	Fort McClellan
GPS	global positioning system
IDW	investigation-derived waste
IT	IT Corporation
PA	preliminary assessment
PID	photoionization detector
PSSC	potential site-specific chemical
PX	post exchange
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
SAP	sampling and analysis plan
SFSP	site-specific field sampling plan
SHP	installation-wide safety and health plan
SI	site investigation
SSHP	site-specific safety and health plan
TCL	target compound list
USACE	U.S. Army Corps of Engineers
Weston	Roy F. Weston
WMP	waste management plan
WP	installation-wide work plan

Executive Summary

In accordance with Contract No. DACA21-96-D-0018, Delivery Order CK005, IT Corporation (IT) will conduct site investigation activities at the Training Aids Building, Parcel 166(7), at Fort McClellan (FTMC), Calhoun County, Alabama, to determine the presence or absence of site-specific chemicals. The purpose of this site-specific field sampling plan (SFSP) is to provide technical guidance for sampling activities at the Training Aids Building site.

The Training Aids Building is located centrally on the Main Post on the corner of MacArthur and 5th Avenue. The building was constructed as a post exchange (PX) in 1942 and was used as a PX branch until at least 1975. In 1980, it became the Training Aids Building, where equipment and supplies for troop training in the classroom (printed material, transparencies, pictures, overhead projectors) were originated (phone communication with Waymon Pence, September 1998). Currently, the building houses two photography laboratories and a graphics department that began operations in 1989. The photography laboratories have four developing machines for slides, black and white prints, and color prints. Photographic waste is drained to a sump. The sump is connected to the sanitary sewer. The sump was constructed at about 1989 to 1990 after the photography laboratory moved to building 267. The FTMC Directorate of Environment sampled the sump contents for metals annually to determine hazardous waste characteristics beginning in 1993 until 1995. Sampling results indicated influent and sump contents did not exceed the regulatory guidance parameters. The photography laboratory has, since 1995, been converted to a digital processing and no further testing is performed. The photography laboratory stores and used small quantities of developing materials. Evidence of past or present spills does not exist at the site.

Potential contaminant sources at the site include organics and metals resulting from generation of training aids materials and photography activities. IT will collect two surface soil samples, two subsurface soil samples, and two groundwater samples at this site. Chemical analyses of the samples collected during the field program will include volatile organic compounds, semivolatile organic compounds, and metals. Results from these analyses will be compared with site-specific screening levels specified in the installation wide work plan, and regulatory agency guidelines.

This SFSP attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for the Training Aids Building site will be used in conjunction with the site-specific safety and health plan (SSHP), and the installation-wide work plan (IT, 1998b) and SAP. The SAP includes

the installation-wide safety and health plan, waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

1.0 Project Description

1.1 Introduction

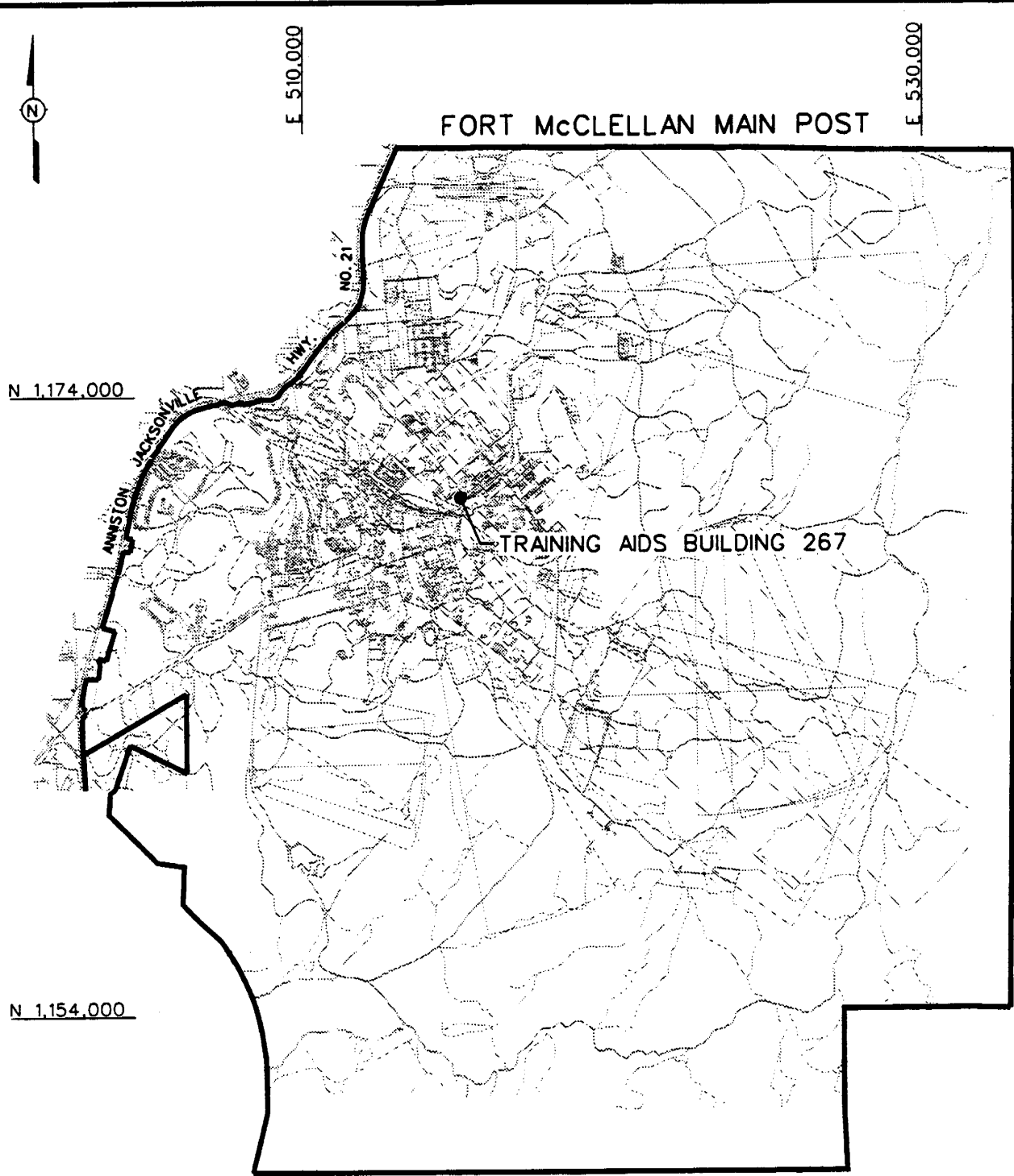
The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Training Aids Building, Parcel 166(7), under Delivery Order CK005, Contract No. DACA21-96-D-0018.

This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for FTMC has been prepared to provide technical guidance and rationale for sample collection and analysis at the Training Aids Building (Figure 1-1). IT will collect samples at this site as part of a SI effort. The results of this effort will determine whether there are contaminants at this site in concentrations high enough to warrant further remedial investigation and/or action. The SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Training Aids Building site, the habitat-specific screening ecological risk assessment work plan, and the installation-wide work plan (WP) (IT, 1998b), waste management plan, and SAP. The SAP includes the installation-wide safety and health plan (SHP) and quality assurance plan (QAP). Site-specific hazardous analyses are included in the SSHP.

1.2 Site Description

The Training Aids Building, Parcel 166(7), is located centrally on the Main Post on the corner of MacArthur and 5th Avenues (Figure 1-2). The building was constructed as a post exchange (PX) in 1942, and was used as a PX branch until at least 1975. In 1980, it became the Training Aids Building, where equipment and supplies for troop training in the classroom (printed material, transparencies, pictures, overhead projectors) were originated (phone communication with Waymon Pence, September 1998). Currently, the building houses two photography laboratories and a graphics department that began operations in 1989. The photography laboratories have four developing machines for slides, black and white prints, and color prints (Roy F. Weston [Weston], 1990). Photographic waste is drained to a sump that is connected to the sanitary sewer. The sump was constructed about 1989 to 1990 after the photography-laboratory moved to Building 267. The sump is constructed of cement, extends approximately 10 feet below ground surface, and is covered by a round heavy-metal lid. The FTMC Directorate of Environment (DOE) sampled the sump contents for metals annually to determine hazardous waste characteristics beginning in 1993 until 1995. Sampling results indicated influent and sump contents did

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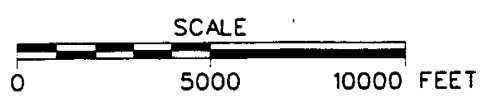
 FORT McCLELLAN BOUNDARY

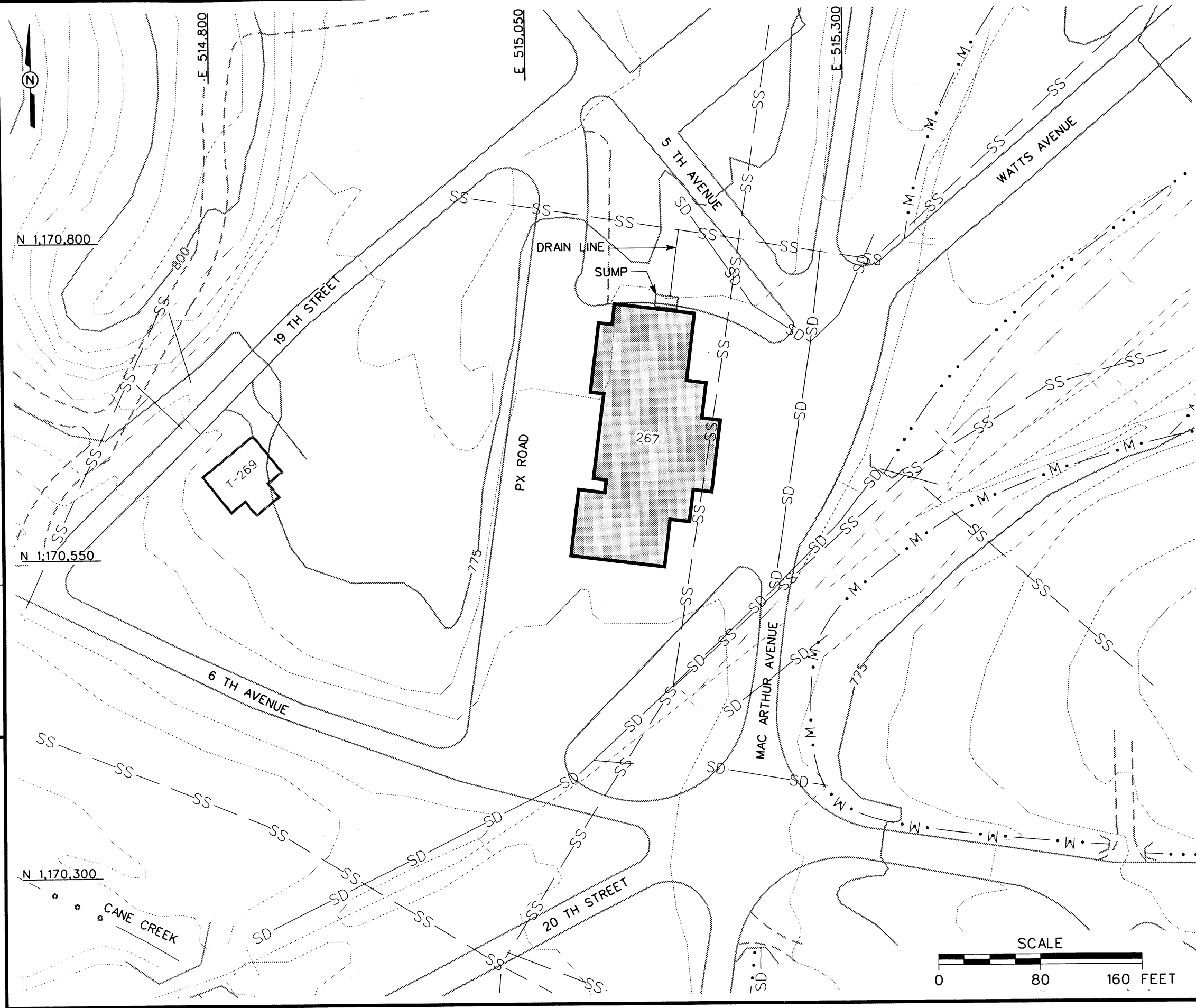
FIGURE 1-1
SITE LOCATION MAP
TRAINING AIDS BUILDING 267
PARCEL 166(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018



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- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS
 - PARCEL BOUNDARY
 - BRIDGE
 - CULVERT WITH HEADWALL
 - SURFACE DRAINAGE / CREEK
 - MANMADE SURFACE DRAINAGE FEATURE
 - RAILROAD
 - SANITARY SEWER LINE
 - STORM DRAINAGE LINE

FIGURE 1-2
SITE MAP
TRAINING AIDS BUILDING 267
(BUILDING 267)
PARCEL 166(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018



not exceed the regulatory guidance parameters. The photography laboratory has, since 1995, been converted to digital processing and no further testing is performed. During the preliminary assessment (PA), used “hypo,” a developing chemical (sodium thiosulfate used as a fixing agent in photography), was reportedly stored in 5-gallon buckets behind the building. This used hypo was sent to the U.S. Army Noble Hospital for silver recovery (Weston, 1990). The photography laboratory stores and uses small quantities of developing materials. Evidence of past or present spills does not exist at the site. The building is located on the Cane Creek flood plain, the primary drainage feature for the Main Post. Elevation is approximately 770 feet, and the ground surface slopes to the west-southwest.

Soils at this site are categorized in the Rarden Series. These soils consist of moderately well drained, strongly acid to very strongly acid soils. They generally occur in large areas on wide shale ridges. They have developed from the residuum of shale and fine-grained, platy sandstone or limestone. In eroded areas, the surface soil is brown silt loam. The subsoil is yellowish-red clay or silty clay mottled with strong brown. Concretions and fragments of sandstone, up to one-half inch in diameter, are commonly on and in the soil.

The specific type of this soil series for Parcel 166(7) is Rarden silty clay loam, shallow, 2 to 6 percent slopes, severely eroded (ReB3). This type of Rarden soil has mild slopes, high erosion, and high runoff. Erosion has removed all or nearly all of the original brown silt loam surface soil (depth from surface is 14 inches). The depth of the subsoil ranges from 14 to 44 inches from the surface. Erosion is a serious hazard. Infiltration is medium, permeability is slow, and capacity for available moisture is low. Depth to water is typically greater than 20 feet. Depth to bedrock is between 1.5 and 4.0 feet.

1.3 Scope of Work

The scope of work for activities associated with the Training Aids Building, as specified in the statement of work (USACE, 1998), include the following tasks:

- Develop the SFSP attachment.
- Develop the SSHP attachment.
- Collect two surface soil, two subsurface soil, and two groundwater samples to define the nature and extent of contamination, if any, at the site and provide data useful in any future planned corrective measures and closure activities.

Upon completion of the field activities and sample analyses, draft and final SI reports will be prepared that summarize the results of the activities in accordance with current U.S. Environmental Protection Agency (EPA) Region IV and the Alabama Department of Environmental Management (ADEM) requirements.

2.0 Summary of Existing Environmental Studies

Environmental Science and Engineering, Inc. (ESE) conducted an environmental baseline survey (EBS) to document current environmental conditions of all FTMC property (ESE, 1998). The study identified sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance on fast track cleanup at closing installations. The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria.

1. Areas where no storage, release, or disposal (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action underway.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the Community Environmental Response Facilitation Act (CERFA) (CERFA-Public Law 102-426) protocols and DOD policy regarding contamination assessment. Record searches and reviews were performed on all reasonably available documents from FTMC, ADEM, EPA Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and Resource Conservation and Recovery Act-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, visual site inspections were conducted to verify conditions of specific property parcels.

A PA was conducted at this site by Weston in 1990. Conclusions and recommendations stated that evidence of past or present spills does not exist at the site; however soil sampling should be conducted and analyzed for metals at the sump location.

The Training Aids Building, Parcel 166(7) site, was classified as Category 7: areas that are not evaluated or require further evaluation.

3.0 Site-Specific Data Quality Objectives

3.1 Overview

The data quality objectives (DQO) process is followed to evaluate data requirements and to support the decision-making process associated with the action selection for the Training Aids Building, Parcel 166(7). This section incorporates the components of the DQO process described in the 1993 EPA publication EPA 540-R-93-071 *Data Quality Objectives for Superfund* (EPA, 1993). The DQO process as applied to the Training Aids Building is described in more detail in Section 4.3 of the WP (IT, 1998b). Table 3-1 provides a summary of the factors used to determine the appropriate quantity of samples, and procedures to meet the objectives of the site investigation, and to establish a basis for future action at this site.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with USACE-Civil Engineering South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

3.2 Data Users and Available Data

The intended data users and available data related to the SI at the Training Aids Building, presented in Table 3-1, have been used to formulate a site-specific conceptual model. This conceptual model was developed to support the development of this SFSP, which is necessary to meet the objectives of these SI activities and to establish a basis for future action at the site. The data users for information generated during field activities are primarily the EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work. The program has also been designed to provide the level of defensible information required to confirm or deny the existence and nature of residual chemical contamination in site media.

3.3 Conceptual Site Exposure Model

The conceptual site exposure model (CSEM) provides the basis for identifying and evaluating the potential risks to human health in the risk assessment. Graphically presenting all possible

Table 3-1

**Summary of Data Quality Objectives
Training Aids Building, Parcel 166(7)
Fort McClellan, Calhoun County, Alabama**

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA ADEM USACE DOD IT Corporation Other Contractors Possible future land users	None	Contaminant Source Photography laboratory Graphics department <u>Migration Pathways</u> Infiltration to surface and subsurface soil Infiltration and leaching to groundwater Dust emission and volatilization to air <u>Potential Receptors</u> Groundskeeper, construction worker, resident, recreational site user PSSCs VOCs Metals	Surface Soil Subsurface Soil Groundwater	SI to confirm whether PSSC are present in the site media. Definitive quality data for future decision-making	Surface Soil TCL VOCs TCL SVOCs TAL Metals Subsurface Soil TCL VOCs TCL SVOCs TAL Metals Groundwater TCL VOCs TCL SVOCs TAL Metals	Definitive data and CESAS Level B Definitive data and CESAS Level B Definitive data and CESAS Level B	2 direct push + QC 2 direct push + QC 2 direct push + QC

ADEM - Alabama Department of Environmental Management.

CESAS - Civil Engineering South Atlantic Savannah (U.S. Army Corps of Engineers).

DOD - U.S. Department of Defense.

EPA - U.S. Environmental Protection Agency.

PSSC - Potential site-specific chemicals.

QC - Quality control.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target Compound list.

TOC - Total organic carbon.

USACE - U.S. Army Corps of Engineers.

VOC - Volatile organic compound.

pathways by which a potential receptor may be exposed, including all sources, release and transport pathways, and exposure routes, facilitates consistent and comprehensive evaluation of risk to human health, and helps to ensure that potential pathways are not overlooked. The elements necessary to construct a complete exposure pathway and develop the CSEM include:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptors
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact with a contaminated source medium.

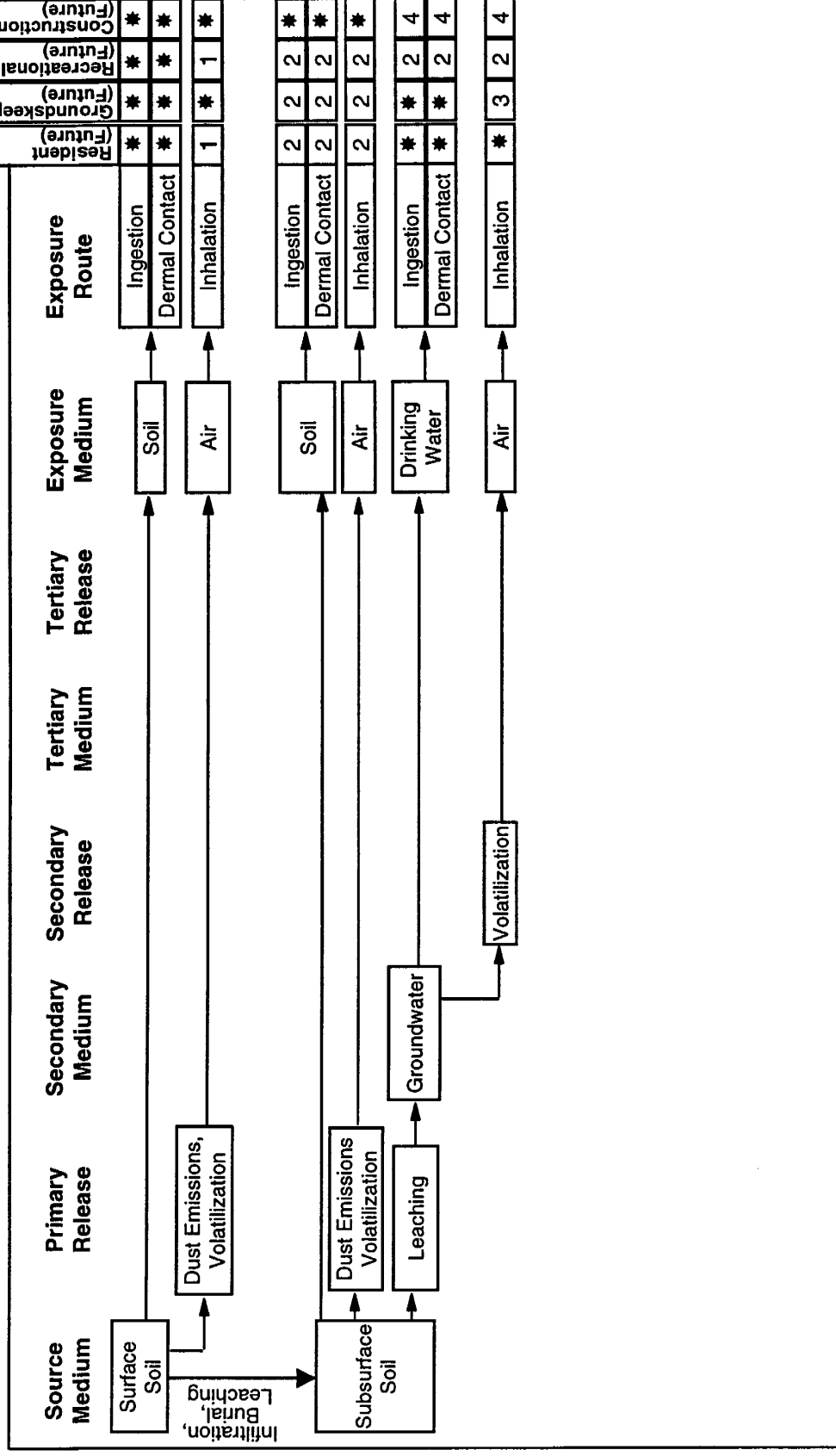
Parcel 166(7) is the current site of photography laboratories and a graphics department and the former location of a PX. Photography waste was drained to a sump (concrete, 2.5 by 2.5 by 8 feet), and the sump is connected to the sanitary sewer. DOE annual sampling results of the contents in the sump until 1995 did not exceed the regulatory guidance parameters. The graphics department stores used developing chemical in 5-gallon buckets behind the building until it is sent to the U.S. Army Noble Hospital for silver recovery.

There is no evidence of past or present spills at Parcel 166(7); therefore, risk to human health is not evaluated for current site-use scenarios. Future plans include demolition of Building 267, and designation of the site as open space/recreational. Plausible future receptors include a groundskeeper, construction worker, resident, and recreational site user. Potential migration pathways at Parcel 166(7) include, infiltration to surface and subsurface soil, infiltration and leaching to groundwater, and dust emissions and volatilization to ambient air.

The contaminant release and transport mechanisms, source and exposure media, receptors, and exposure pathways are summarized in Figure 3-1.

Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling, specific ecological assessment methods, etc.) will be addressed in a separate document to be issued as the habitat-specific screening ecological risk assessment WP.

Figure 3-1
Human Health Conceptual Site Exposure Model, Training Aids Building, Parcel 166(7)
Fort McClellan, Alabama



* = Complete exposure pathway quantified in SSSL development.

1 = Volatilization from undisturbed surface soil deemed insignificant; soil is likely to be paved or vegetated, reducing dust emissions to insignificant levels; inhalation pathway not quantified.

2 = Incomplete exposure pathway.

3 = Although theoretically complete, this pathway is judged to be insignificant.

4 = Although theoretically complete, these pathways are not quantified for the construction worker because SSSLs developed for the groundskeeper would be at least as restrictive.

3.4 Decision-Making Process, Data Uses, and Needs

The decision-making process consists of a seven-step process that is presented in detail in Section 4.3 of the WP and will be followed during the site investigation at the Training Aids Building, Parcel 166(7) site. Data uses and needs are summarized in Table 3-1.

3.4.1 Risk Evaluation

Confirmation of the presence or absence of contamination at the Training Aids Building will be based on a comparison of detected site contaminants to site-specific screening levels developed in the WP (IT, 1998b). EPA definitive data with CESAS Level B data packages will be used to achieve detection limits sufficient to determine if the established guidance criteria limits are exceeded in site media. This definitive data will be adequate for confirming the presence or absence of site contamination and for supporting a feasibility study and risk assessment.

3.4.2 Data Types and Quality

Surface soil, subsurface soil, and groundwater will be sampled and analyzed in order to meet the objectives of the SI. Quality assurance/quality control (QA/QC) samples will be collected for the sample types as described in Chapter 4.0 of this SFSP. Samples will be analyzed by EPA-approved SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

3.4.3 Precision, Accuracy, and Completeness

Laboratory requirements of precision, accuracy, and completeness for this SI are provided in Section 9.0 of the QAP.

4.0 Field Activities

The parcel of property being investigated under this SI was identified during the EBS (ESE, 1998) and categorized as a Category 7 site. Category 7 indicates the sites that have not been evaluated or that need additional investigation. The environmental sampling program will consist of collecting surface soil, subsurface soil, and groundwater samples.

4.1 Utility Clearances

Prior to performing any intrusive sampling, a utility clearance will be performed at all locations where samples will be collected, using the procedure as specified in Section 4.2.6 of the SAP. The site manager will mark the proposed locations with stakes, coordinate with the FTMC personnel to clear the proposed locations for utilities, and obtain digging permits. Once locations are cleared, the stakes will be labeled as cleared.

4.2 Environmental Sampling

The environmental sampling to be performed during the site investigation at the Training Aids Building, Parcel 166(7), will include the collection of surface soil, subsurface soil, and groundwater for chemical analysis. The placement of sample locations was determined by site physical characteristics noted during a site walk-over, and by review of historical documents pertaining to activities conducted at the site. The sample locations, media, location descriptions, and rationale are summarized in Table 4-1.

4.2.1 Surface Soil Sampling

Two surface soil samples will be collected from two site locations at the Training Aids Building.

4.2.1.1 Sample Locations and Rationale

Surface soil sampling rationale is presented in Table 4-1. Proposed sampling locations are shown in Figure 4-1. Surface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact soil boring sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

4.2.1.2 Sample Collection Procedures

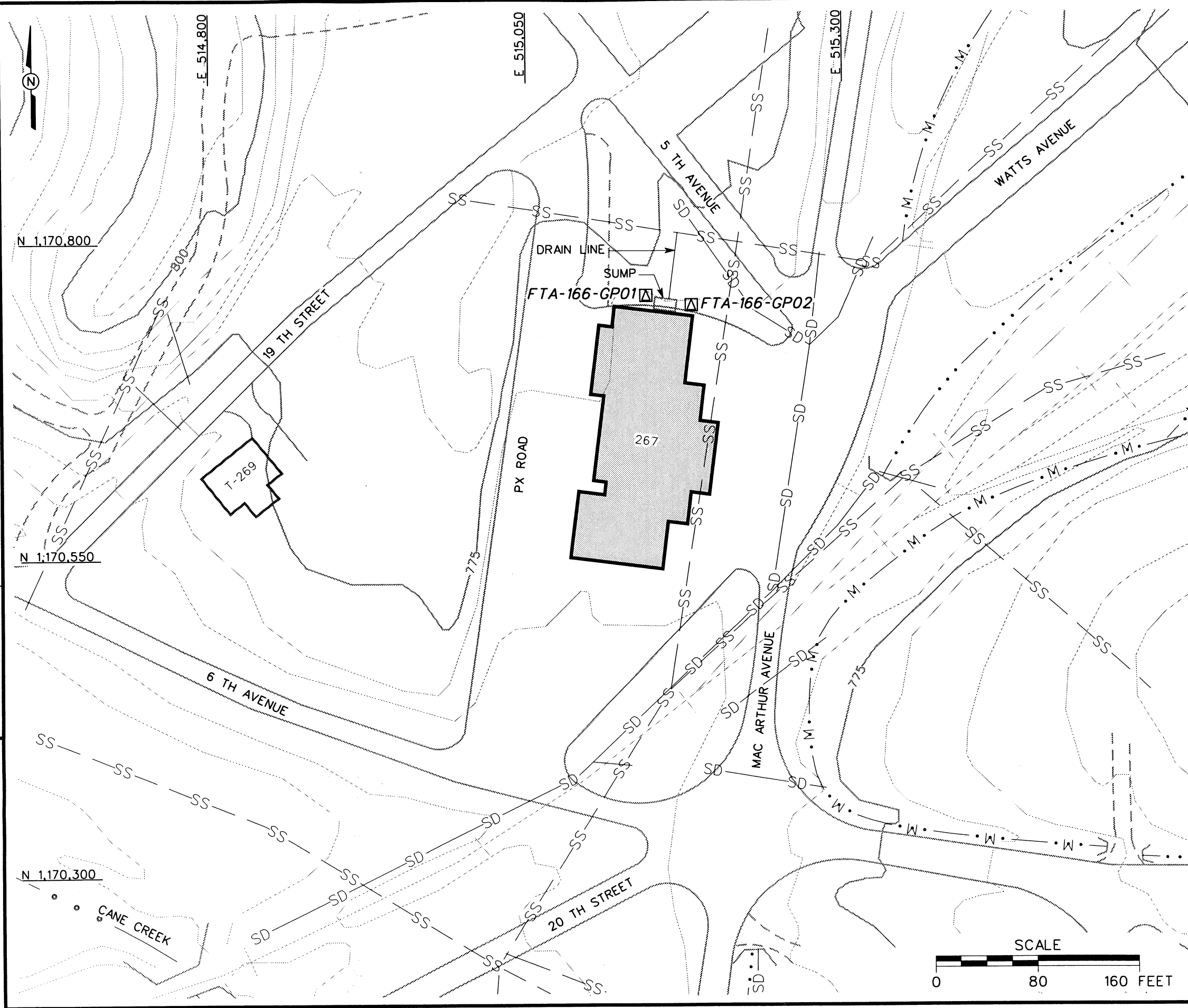
Surface soil samples will be collected from the upper 1 foot of soil by direct-push technology using the methodology specified in Section 4.7.1.1 of the SAP. Collected soil samples will be screened using a photoionization detector (PID) in accordance with Section 4.15 of the SAP.

Table 4-1

**Site Sampling Rationale
Training Aids Building, Parcel 166(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Media	Sampling Location Rationale
FTA-166-GP01	Surface Soil Subsurface Soil Groundwater	Soil and groundwater will be collected on the west side of the sump at the north end of Building 267 to determine if PSSCs are present.
FTA-166-GP02	Surface Soil Subsurface Soil Groundwater	Soil and groundwater will be collected on the east side of the sump at the north end of Building 267 to determine if PSSCs are present.

PSSC - Potential site-specific chemicals.



LEGEND

UNIMPROVED ROADS AND PARKING

PAVED ROADS AND PARKING

BUILDING

TOPOGRAPHIC CONTOURS

PARCEL BOUNDARY

BRIDGE

CULVERT WITH HEADWALL

SURFACE DRAINAGE / CREEK

MANMADE SURFACE DRAINAGE FEATURE

RAILROAD

SANITARY SEWER LINE

STORM DRAINAGE LINE

PROPOSED GROUNDWATER, SURFACE AND SUBSURFACE SOIL SAMPLE

FIGURE 4-1

PROPOSED SAMPLING LOCATIONS

TRAINING AIDS BUILDING

(BUILDING 267)

PARCEL 166(7)

U. S. ARMY CORPS OF ENGINEERS

MOBILE DISTRICT

FORT MCLELLAN

CALHOUN COUNTY, ALABAMA

Contract No. DACA21-96-D-0018

INTERNATIONAL

TECHNOLOGY

CORPORATION

Table 4-2

Surface, Subsurface, and Depositional Soil Sample Designations and QA/QC Sample Quantities
Training Aids Building, Parcel 166(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-166-GP01	FTA-166-GP01-SS-EL0001-REG	0-1.0			FTA-166-GP01-SS-EL0001-MS	TCL VOCs TCL SVOCs, TAL Metals
	FTA-166-GP01-DS-EL0002-REG	a			FTA-166-GP01-SS-EL0001-MSD	
FTA-166-GP02	FTA-166-GP02-SS-EL0003-REG	0-1.0	FTA-166-GP03-SS-EL0004-FD	FTA-166-GP03-SS-EL0005-FS		TCL VOCs TCL SVOCs, TAL Metals
	FTA-166-GP02-DS-EL0006-REG	a				

^aActual sample depth selected for analysis will be at the discretion of the on-site geologist and will be based on field observations.

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Chapter 5.0, Table 5-1, of the QAP. Sample documentation and chain of custody (COC) will be recorded as specified in Section 4.13 of the SAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.2 Subsurface Soil Sampling

Subsurface soil samples will be collected from the two soil borings proposed at the site.

4.2.2.1 Sample Locations and Rationale

Subsurface soil samples will be collected from the two soil borings shown on Figure 4-1.

Subsurface sampling rationale is presented in Table 4-1. Subsurface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact soil boring sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

4.2.2.2 Sample Collection Procedures

Subsurface soil samples will be collected using direct-push methodology specified in Sections 4.7.1.1 and 4.9.1.1 of the SAP. Subsurface soil samples will be collected for the first 12 feet or until either groundwater or refusal is reached, whichever occurs first. A detailed lithological log will be recorded by the on-site geologist for each borehole. At least one subsurface sample from each borehole will be selected for analyses. Collected subsurface soil samples will be field screened using a PID in accordance with Section 4.15 of the SAP to measure samples exhibiting elevated readings exceeding background. Typically, the sample showing the highest reading will be selected and sent to the laboratory for analysis. If none of the samples indicate elevated readings exceeding background with the PID, the deepest interval collected from the boring will be submitted for laboratory analysis. Subsurface soil samples will be selected for analyses from any depth interval if the on-site geologist suspects potential site-specific chemicals (PSSC). Site conditions such as lithology may also determine the actual sample depth interval submitted for analyses. More than one subsurface soil sample will be collected if field measurements and observations indicate a possible layer of PSSC, and/or additional sample data would provide insight for determining the existence of any PSSCs. Any additional subsurface samples will be collected at the discretion of the on-site geologist, based on field observations.

4.2.3 Groundwater Sampling

Groundwater samples will be collected from direct-push temporary wells installed at the site. Temporary wells will be installed in the two borings described in Section 4.2.2 to collect groundwater samples.

4.2.3.1 Sample Locations and Rationale

Two groundwater samples will be collected from direct-push temporary wells installed at the site. Groundwater sampling rationale is presented in Table 4-1. The groundwater sample designations, depths, and required QA/QC sample quantities are listed in Table 4-3. The exact sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

It is anticipated that groundwater will not be encountered in every borehole. If groundwater is not encountered, a sample will not be collected in place of the groundwater sample. However, after the initial field sampling program, the analytical data for the site samples collected at Parcel 166(7) will be reviewed. Based on the review of analytical results, a determination will be made to either install monitor wells or not collect any additional samples.

4.2.3.2 Sample Collection Procedures

Groundwater samples will be collected in accordance with the procedures specified in Section 4.7.1.1 of the SAP. The temporary well at each location will be completed to approximately 4 or 5 feet below (if possible) the soil/water table interface (to encounter sufficient water) to collect a groundwater sample. Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Chapter 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.3 Surveying of Sample Locations

Sampling locations will be marked with pin flags, stakes, and/or flagging and will be surveyed using either global positioning system (GPS) or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the Alabama State Plane Coordinate System, 1983 North American Datum (NAD83). Elevations will be referenced to the National Geodetic Vertical Datum of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Table 4-3

Groundwater Sample Designations and QA/QC Sample Quantities
Training Aids Building, Parcel 166(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-166-GP01	FTA-166-GP01-GW-EL3001-REG	Water table ^a			FTA-166-GP01-GW-EL3001-MS FTA-166-GP01-GW-EL3001-MSD	TCL VOCs, TCL SVOCs, TAL Metals
FTA-166-GP02	FTA-166-GP02-GW-EL3002-REG	Water table ^a	FTA-166-GP03-GW-EL3003-FD	FTA-166-GP03-GW-EL3004-FS		TCL VOCs, TCL SVOCs, TAL Metals

^a Actual groundwater sample depth will depend on the first encounter of water sufficient enough to collect a sample.

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

Horizontal coordinates for soil, sediment, and surface water locations will be recorded using a GPS to provide accuracy within 1 meter. Because of the need to use temporary wells to determine water levels, a higher level of accuracy is required. Temporary wells will be surveyed to an accuracy of 0.1 foot for horizontal coordinates and 0.01 foot for elevations, using survey-grade GPS techniques and/or conventional civil survey techniques, as required. Permanent monitoring well locations will be surveyed by a registered professional land surveyor to provide the required accuracy of 0.1 foot for horizontal coordinates and 0.01 foot for elevations.

Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.

4.4 Decontamination Requirements

Sampling and nonsampling equipment will be decontaminated primarily to ensure that contaminants are not introduced into samples from location to location. Decontamination requirements are detailed in Section 4.10.1 of the SAP (IT, 1998a). Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP.

Decontamination of nonsampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP.

4.5 Analytical Program

Samples collected at locations specified in this chapter will be analyzed for various physical and chemical properties. The on-site sample coordinator will provide sampling containers and preservatives, and will coordinate sampling procedures with the field sampling crews in accordance with Table 5-1 in the QAP. The specific suite of analyses to be performed is based on the history of site usage and EPA, ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the Training Aids Building consist of the following list of parameters:

- Target compound list (TCL) volatile organic compounds - Method 5035/8260B
- TCL semivolatile organic compounds - Method 8270C
- Target analyte list metals - Method 6010B/7000.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-4 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using CLP-like

Table 4-4

Analytical Samples
Training Aids Building, Parcel 166(7)
Fort McClellan, Calhoun County, Alabama

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples			QA/QC Samples*					Quanterra Total No. Analysis	QA Lab Total No. Analysis
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Splits w/ QA Lab (10%)	MSMSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)		
Training Aids Building, Parcel 166(7): 2 groundwater, 4 soil, 2 surface soil, 2 subsurface soil													
TCL VOCs	8260B	water	normal	2	1	2	1	1	1	1	1	7	1
TCL SVOCs	8270C	water	normal	2	1	2	1	1	1	1	1	6	1
Total TAL Metals	6010B/7000	water	normal	2	1	2	1	1	1	1	1	6	1
TCL VOCs	8260B	soil	normal	4	1	4	1	1	1	1	1	8	1
TCL SVOCs	8270C	soil	normal	4	1	4	1	1	1	1	1	8	1
TAL Metals	6010B/7000	soil	normal	4	1	4	1	1	1	1	1	8	1
Training Aids Building Subtotal:							6	6	6	1	6	43	6

* Field duplicate, QA split, and MS/MSD samples were calculated as a percentage of the field samples collected per site and were rounded up to the nearest whole number. Trip blank samples will be collected in association with water matrix samples for VOC analysis only. Assumed four field samples per day to estimate trip blanks. Equipment blanks will be collected once per event whenever sampling equipment is field decontaminated and re-used. They will be repeated weekly for sampling events that are anticipated to last more than 1 week. Assumed 20 field samples will be collected per week to estimate number of equipment blanks.

Ship samples to:

Quanterra Environmental Services
 5815 Middlebrook Pike
 Knoxville, Tennessee 37921
 Attn: John Reynolds
 Tel: 423-588-6401
 Fax: 423-584-4315

USACE Laboratory split samples
 are shipped to:

USACE South Atlantic Division Laboratory
 Attn: Sample Receiving
 611 South Cobb Drive
 Marietta, Georgia 30060-3112
 Tel: 770-919-5270

QA/QC - Quality assurance/quality control.
 MS/MSD - Matrix spike/matrix spike duplicate.
 VOC - Volatile organic compound.
 SVOC - Semivolatile organic compound.
 TAL - Target analyte list.
 TCL - Target compound list.

forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

4.6 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping will follow requirements specified in Section 4.13.2 of the SAP (IT, 1997a). Completed analysis request/COC records will be secured and included with each shipment of coolers to:

Sample Receiving
Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Telephone: (423) 588-6401.

Field split samples will be shipped to:

Sample Receiving
USACE South Atlantic Division Laboratory
611 South Cobb Drive
Marietta, Georgia 30060
Telephone: (770) 919-5270.

4.7 Investigation-Derived Waste Management and Disposal

Management and disposal of the investigation-derived wastes (IDW) will follow procedures and requirements as described in Section 4.11 and Appendix D of the SAP. The IDW expected to be generated at the Training Aids Building, Parcel 166(7) site, will include decontamination fluids and possibly disposable personal protective equipment. IDW will be staged in the fenced area surrounding Buildings 335 and 336 while awaiting final disposal.

5.0 Project Schedule

The project schedule for the SI activities will be provided by the IT project manager to the Base Closure Team on a monthly basis.

6.0 References

Environmental Science and Engineering, Inc. (ESE), 1998, *Environmental Baseline Survey, Fort McClellan, Calhoun County, Alabama*, prepared for U.S. Army Environmental Center, January.

IT Corporation (IT), 1998a, *Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama, Revision 2*, prepared for U.S. Army Corps of Engineers, August.

IT Corporation (IT), 1998b, *Final Installation-Wide Work Plan, Fort McClellan, Calhoun County, Alabama*, prepared for U.S. Army Corps of Engineers, August.

Roy F. Weston, Inc.(Weston), 1990, *Enhanced Preliminary Assessment, Fort McClellan, Calhoun County, Alabama*, prepared for U.S. Army Toxic and Hazardous Materials Agency, December.

U.S. Army Corps of Engineers (USACE), 1998, *Statement of work for Task Order CK05, Site Investigations at Fort McClellan, Alabama*, January.

U.S. Army Corps of Engineers (USACE), 1994, *Requirements for the Preparation of Sampling and Analysis Plans*, Engineer Manual EM 200-1-3, September 1.

U.S. Environmental Protection Agency (EPA), 1993, *Data Quality Objectives Process for Superfund, Interim Final Guidance*, EPA 540-R-93-071, September.

Site Investigation

Final

Site-Specific Field Sampling Plan Attachment
for the Former Chemical Laundry and
Motor Pool Area 1500, Parcels 94(7), 132(7),
133(7), and 134(7)

Fort McClellan
Calhoun County, Alabama

Prepared for:

U.S. Army Corps of Engineers, Mobile District
109 St. Joseph Street,
Mobile, Alabama 36602

Prepared by:

IT Corporation
312 Directors Drive
Knoxville, Tennessee 37923

Delivery Order CK005
Contract No. DACA21-96-D-0018
IT Project No. 774645

October 1998

Revision 1

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List of Acronyms

ADEM	Alabama Department of Environmental Management
CERFA	Community Environmental Response Facilitation Act
CESAS	Civil Engineering South Atlantic Savannah (U.S. Army Corps of Engineers)
CLP	Contract Laboratory Program
COC	chain of custody
CSEM	conceptual site exposure model
CWM	chemical warfare material
DOD	U.S. Department of Defense
DQO	data quality objective
EBS	environmental baseline survey
EM	electromagnetic
EPA	U.S. Environmental Protection Agency
ESE	Environmental Sciences and Engineering
E-W	east to west
FTMC	Fort McClellan
GPR	ground-penetrating radar
GPS	global positioning system
IDW	investigation-derived waste
IT	IT Corporation
N-S	north to south
PCB	polychlorinated biphenyl
PID	photoionization detector
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
SAP	installation-wide sampling and analysis plan
SFSP	site-specific field sampling plan
SHP	installation-wide safety and health plan
SSHPP	site-specific safety and health plan
SI	site investigation
SVOC	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
USACE	U.S. Army Corps of Engineers
UST	underground storage tank

List of Acronyms *(Continued)*

VOC	volatile organic compound
WP	installation-wide work plan

Executive Summary

In accordance with Contract No. DACA21-96-D-0018, Delivery Order CK005, IT Corporation (IT) will conduct site investigation activities at the Former Chemical Laundry and Motor Pool Area 1500, Parcels 94(7), 132(7), 133(7), and 134(7), at Fort McClellan (FTMC), Calhoun County, Alabama, to determine the presence or absence of site-specific chemicals. The purpose of this site-specific field sampling plan (SFSP) is to provide technical guidance for sampling activities at the Former Chemical Laundry and Motor Pool Area 1500 site.

The Former Chemical Laundry and Motor Pool Area 1500 is located in the central part of the Main Post, east of 5th Avenue and south of 22nd Street. The area covers approximately 5 acres and was used as a former vehicle maintenance facility (motor pool), which housed three gas stations during World War II. The three gas stations included Buildings 1494, 1594, and 1594A. Each building was constructed in 1941 and consisted of a 9-by-21-foot cement foundation and a corrugated steel wall. Two fuel pumps were reported located on an island directly in front of each building approximately 20 feet away. Reportedly, two 10,000-gallon underground storage tanks (UST) containing mogas and diesel were located at each building; however, the status of the USTs is unevaluated. Three structures that correspond to the probable gas station are visible on the 1944 and 1954 aerial photographs and remain at the site.

Two chemical impregnation plants were reportedly located at the area. Although the exact dates of operation of the facilities are not known, it has been estimated that chemical impregnation activities began at the site in 1951 with the arrival of the U.S. Army Chemical School at FTMC and continued through the mid-1960s, when butyl rubber protective garments began to be issued. The garment impregnation facilities were reportedly used to launder and treat military garments to render them relatively impermeable to chemical warfare material (CWM) and to neutralize CWM. Decontaminated used garments were chemically treated and re-impregnated with a mixture of wax and chemicals designed to neutralize CWM. The garments were used in live CWM training. The buildings no longer exist at the site; however, two foundation concrete slabs that correspond to the former motor pool and chemical impregnation facilities remain at the site.

Potential contaminant sources at the site include waste oils, fuel and fuel components, organics, and metals resulting from motor pool and chemical impregnation activities. IT will conduct a geophysical survey and collect 6 surface soil samples, 12 subsurface soil samples, 5 groundwater samples (4 direct-push and 1 monitoring well), 2 surface water samples, 2 sediment samples, and

4 depositional soil samples at this site. Chemical analyses of the samples collected during the field program will include volatile organic compounds, semivolatile organic compounds, polychlorinated biphenyls, and metals. Results from these analyses will be compared with site-specific screening levels specified in the installation-wide work plan, and regulatory agency guidelines.

This SFSP attachment to the installation-wide sampling and analysis plan (SAP) (IT Corporation [IT], 1998a) for Former Chemical Laundry and Motor Pool Area 1500 will be used in conjunction with the site-specific safety and health plan (SSHP), the habitat-specific screening ecological risk assessment work plan, and the installation-wide work plan (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan, waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

1.0 Project Description

1.1 Introduction

The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Former Chemical Laundry and Motor Pool Area 1500, under Delivery Order CK005, Contract No. DACA21-96-D-0018.

This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for FTMC has been prepared to provide technical guidance and rationale for sample collection and analysis at the Former Chemical Laundry and Motor Pool Area 1500, Parcels No. 94(7), 132(7), 133(7), and 134(7) (Figure 1-1). IT will collect samples at this site as part of a SI effort. The results of this effort will determine whether there are contaminants at this site in concentrations high enough to warrant further remedial investigation and/or action. The SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Former Chemical Laundry and Motor Pool Area 1500 site, the habitat-specific screening ecological risk assessment work plan, the installation-wide work plan (WP) (IT, 1998b), and SAP. The SAP includes the installation-wide safety and health plan (SHP), waste management plan, and quality assurance plan (QAP). Site-specific hazardous analyses are included in the SSHP.

1.2 Site Description

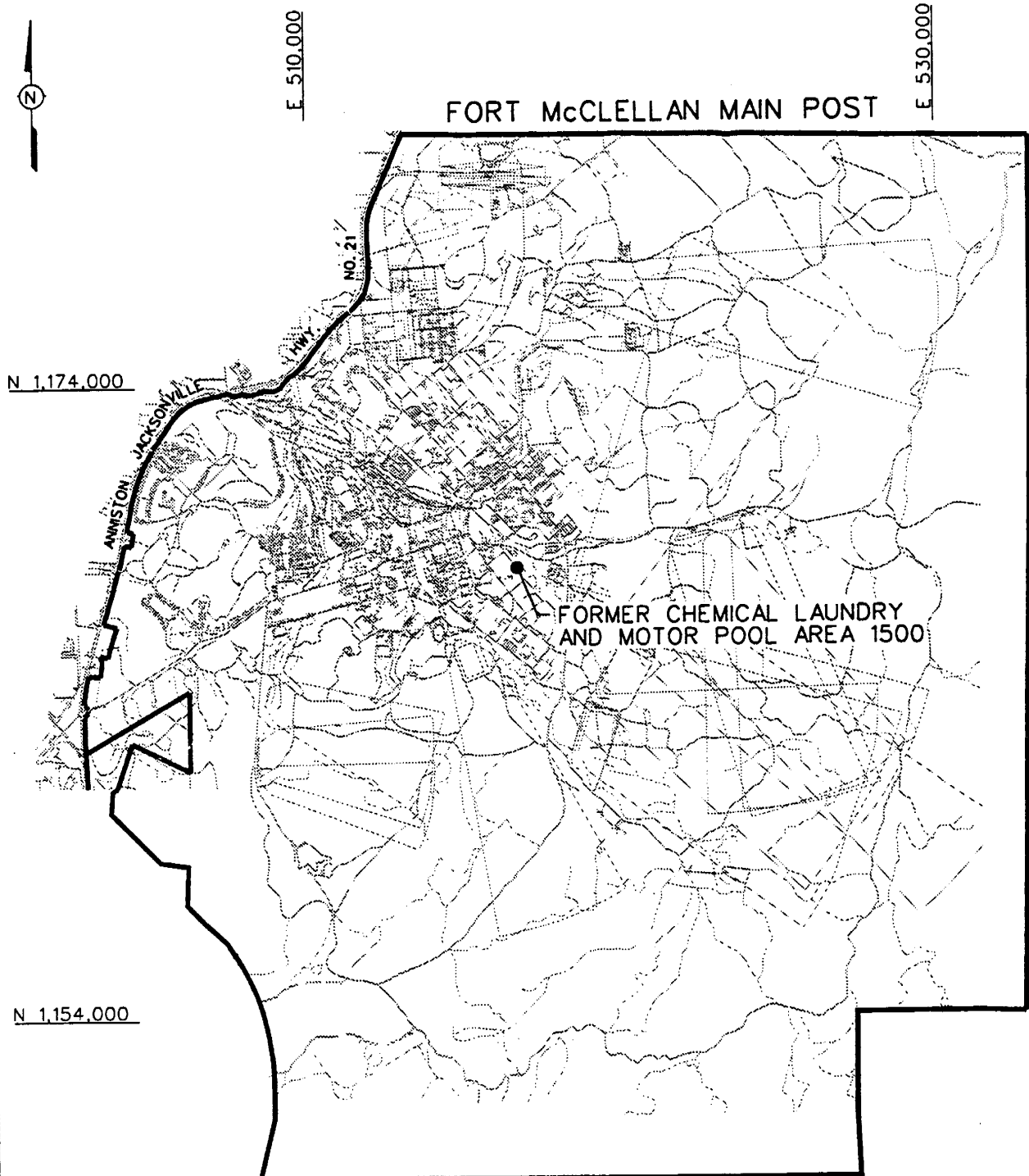
The Former Chemical Laundry and Motor Pool Area 1500 site is located in the central part of the Main Post east of 5th Avenue and south of 22nd Street (Figure 1-2). The study area covers approximately 5 acres.

The area was used as a former vehicle maintenance facility (motor pool), which housed three gas stations during World War II. The three gas stations included Buildings 1494 (Parcel 133[7]), 1594 (Parcel 132[7]), and 1594A (Parcel 134[7]). Each building was constructed in 1941 and consisted of a 9-by-21-foot cement foundation and a corrugated steel wall. Two fuel pumps were reported located on an island directly in front of each building approximately 20 feet away. Reportedly, two 10,000-gallon underground storage tanks (UST) containing mogas and diesel were located at each building; however, the status of the USTs is unevaluated (Environmental Sciences and Engineering [ESE], 1998). Three structures that correspond to the probable gas

DWG. NO.: \774645es.030	INITIATOR: A. MAYILA	DRAFT. CHCK. BY:	DATE LAST REV:	STARTING DATE: 05/29/98	29 MAY 98
PROJ. NO.: 774645	PROJ. MGR.: J. YACOB	ENGR. CHCK. BY: A. MAYILA	DRAWN BY:	DRAWN BY: D. BILLINGSLEY	14:46:25

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LEGEND:



FORT McCLELLAN BOUNDARY

SCALE
0 5000 10000 FEET

FIGURE 1-1

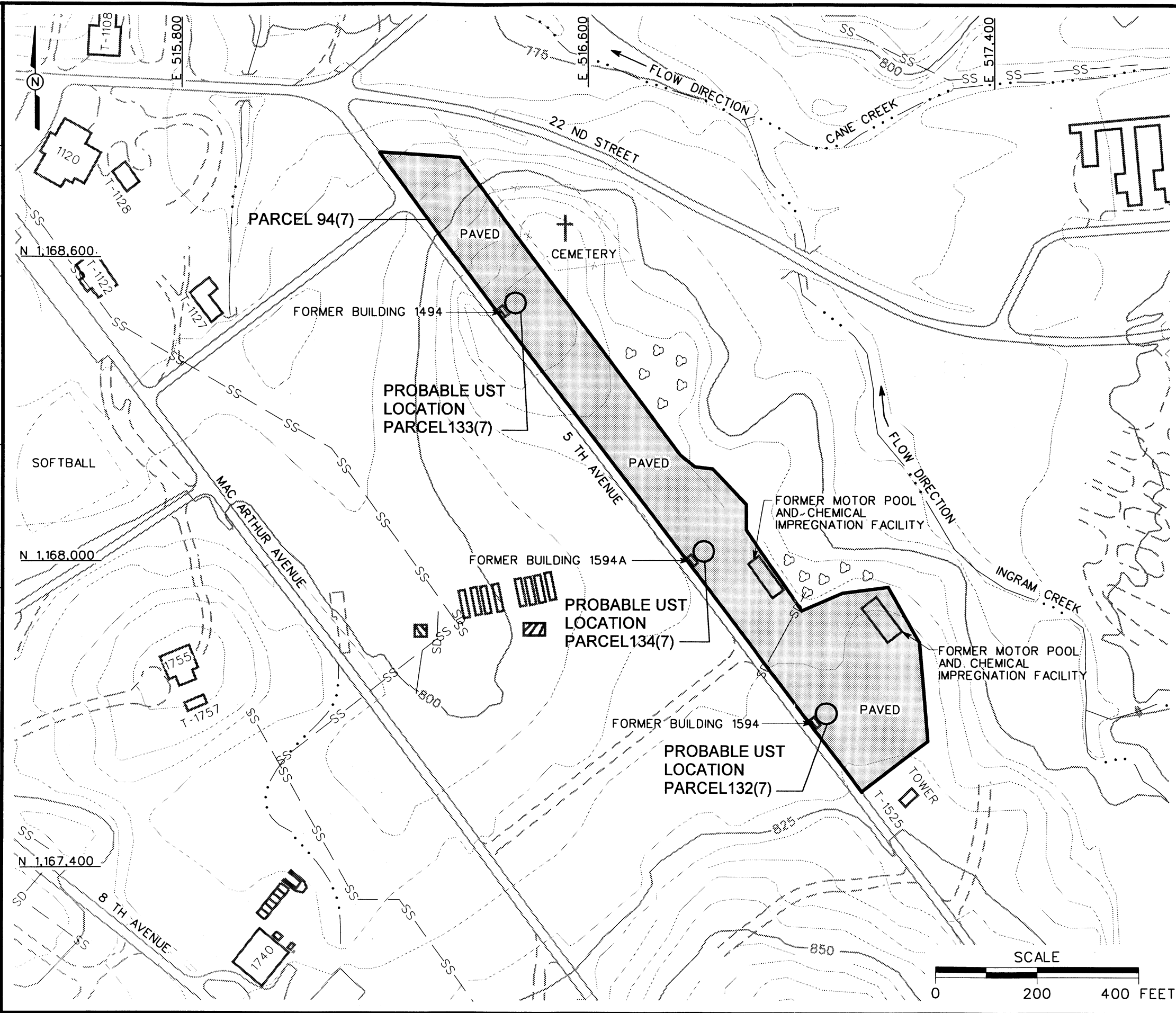
SITE LOCATION MAP
FORMER CHEMICAL LAUNDRY AND
MOTOR POOL AREA 1500
PARCELS 94(7), 132(7), 133(7)
AND 134(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018



INTERNATIONAL
TECHNOLOGY
CORPORATION

DWG. NO.: 74645es.091
 PROJ. NO.: 774645
 INITIATOR: A. MAYILA
 PROJ. MGR.: J. YACOB
 DRAFT. CHK. BY:
 ENGR. CHK. BY: A. MAYILA
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 DRAWN BY: D. BILLINGSLEY
 STARTING DATE: 06/02/98
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- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS
 - TREES / TREELINE
 - PARCEL BOUNDARY
 - BRIDGE
 - CULVERT WITH HEADWALL
 - SURFACE DRAINAGE / CREEK
 - FENCE
 - SANITARY SEWER LINE
 - STORM DRAINAGE LINE

FIGURE 1-2
SITE MAP
FORMER CHEMICAL LAUNDRY AND
MOTOR POOL AREA 1500
PARCELS 94(7), 132(7), 133(7)
AND 134(7)

U. S. ARMY CORPS OF ENGINEERS
 MOBILE DISTRICT
 FORT McCLELLAN
 CALHOUN COUNTY, ALABAMA
 Contract No. DACA21-96-D-0018



stations are visible on the 1944 and 1954 aerial photographs and their foundations remain at the site.

Two chemical impregnation plants were reportedly located at this area. Although the exact dates of operation of the facility are not known, it has been estimated that chemical impregnation activities began at the site in 1951 with the arrival of the U.S. Army Chemical School at FTMC and continued through the mid-1960s, when butyl rubber protective garments began to be issued. The garment impregnation facilities were reportedly used to launder and treat military garments to render them relatively impermeable to chemical warfare material (CWM) and to neutralize CWM. Decontaminated used garments were chemically treated and re-impregnated with a mixture of wax and chemicals designed to neutralize CWM. The garments were used in live CWM training. Interviews conducted by ESE (1998) rendered varying accounts as to the specifics of the procedures used. Some personnel recalled that the impregnation plants used large volumes of toluene or ethyl alcohol. One interviewer reported use of "B-1 dye." Neither confirmation of use of B-1 dye nor information about the dye was obtained during environmental baseline survey (EBS) activities (ESE, 1998). However, the standard operating procedure for typical impregnation plants describes only use of water, wax, and chlorinated oil.

The buildings do not currently exist at the site. The entire area is paved with asphalt. However, two foundational concrete slabs constructed with grease pits that correspond to the former motor pool and chemical laundry facilities remain at the site.

The site slopes slightly to the north and east towards Ingram Creek, a tributary of Cane Creek. Elevation at the site ranges from 800 to 825 feet. Soils at the site fall into the Anniston series. The mapping unit consists of strongly acidic, friable soils that have developed from old alluvium on foot slopes and fans along the bases of the mountains. The surface horizon is mainly dark reddish gravelly loam. The subsoil is typically dark red clay loam with pebbles and concretions (U.S. Department of Agriculture, 1961). In October 1997, SAIC installed a background monitoring well (MW-BK-G11) at the site. During well installation activities, soils encountered included clayey silt interbedded with fine to very coarse sand between 3.6 to 23.5 feet below ground surface (bgs), and sandy clay with medium to coarse sand between 23.5 to 42.5 feet bgs. Groundwater was encountered at 22.5 feet bgs. Additional site-specific geology and hydrogeology data will be gathered during site investigation activities.

1.3 Scope of Work

The scope of work (USACE, 1998) for activities associated with the SI at the Former Chemical Laundry and Motor Pool Area 1500 site includes the following tasks:

- Develop the SFSP attachment.
- Develop the SSHP attachment.
- Collect 6 surface soil, 12 subsurface soil, 5 groundwater (4 direct-push, 1 monitoring well), 2 surface water, 2 sediment, and 4 depositional soil samples to determine whether site-specific chemicals are present at the Former Chemical Laundry and Motor Pool Area 1500 site, and to provide data to determine future planned corrective measures and closure activities.
- Conduct a geophysical survey using magnetics, time and frequency-domain electromagnetics (EM) induction, and ground-penetrating radar (GPR) techniques to locate potential USTs present at the site.

Upon completion of the field activities and sample analyses, draft and final SI reports will be prepared in accordance with current U.S. Environmental Protection Agency (EPA) Region IV and Alabama Department of Environmental Management (ADEM) requirements.

2.0 Summary of Existing Environmental Studies

ESE conducted an EBS to document current environmental conditions of all FTMC property (ESE, 1998). The study identified sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance on fast track cleanup at closing installations. The EBS also provided a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria.

1. Areas where no storage, release, or disposal (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action underway.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the Community Environmental Response Facilitation Act (CERFA) (CERFA-Public Law 102-426) protocols and DOD policy regarding contamination assessment. Record searches and reviews were performed on all reasonably available documents from FTMC, ADEM, EPA Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and Resource Conservation and Recovery Act-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, visual site inspections were conducted to verify conditions of specific property parcels. One monitoring well was installed at the site by Science Applications International Corporation in October 1997 as a background groundwater sampling location. The well was sampled for target analyte list (TAL) metals and common anions, including sulfate, bicarbonate, chloride, bromide, fluoride, carbonate, nitrate, and phosphate. Other environmental sampling activities have not been conducted at this site. The Former Chemical Laundry and Motor Pool Area 1500 was identified as a Category 7 CERFA site, where previous investigations have not been conducted and further evaluation was needed.

3.0 Site-Specific Data Quality Objectives

3.1 Overview

The data quality objective (DQO) process is followed to evaluate data requirements and to support the decision-making process associated with future action at the Former Chemical Laundry and Motor Pool Area 1500 site. This section incorporates the components of the DQO process described in the EPA publication EPA 540-R-93-071 *Data Quality Objectives Process for Superfund* (EPA, 1993). The DQO process as applied to the Former Chemical Laundry and Motor Pool Area 1500 SI is described in more detail in Section 4.3 of the WP (IT, 1998b). Table 3-1 provides a summary of the factors used to determine the sampling quantity and procedures necessary to meet the objectives of the SI and to establish a basis for future action at the site.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SSFP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with USACE- Civil Engineering South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

3.2 Data Users and Available Data

The intended data users and available data related to the SI at Former Chemical Laundry and Motor Pool Area 1500, as presented in Table 3-1, have been used to formulate a site-specific conceptual model. This conceptual model was developed to support the development of this SFSP, which is necessary to meet the objectives of these activities and to establish a basis for future action at the site. The data users for information generated during field activities are primarily EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work. The program has also been designed to provide the level of defensible data and information required to confirm or rule out the existence of residual chemical contamination in the site media and, if needed, determine the nature and extent of potential site-specific chemicals.

Table 3-1

Summary of Data Quality Objectives
Site Investigation, Former Chemical Laundry and Motor Pool Area 1500,
Parcels 94(7), 132(7), 133(7) and 134(7)
Fort McClellan, Calhoun County, Alabama

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA ADEM USACE DOD IT Corporation Other Contractors Possible future land users	Inorganic data from SAIC-installed monitoring well	<p><u>Contaminant Source</u> Former Chemical Laundry and Motor Pool, USTs</p> <p><u>Migration Pathways</u> Infiltration to subsurface soil Infiltration and leaching to groundwater Discharge of groundwater to the surface Dust emissions and volatilization to air Surface water runoff and erosion to sediment</p> <p><u>Potential Receptors</u> Future groundskeeper Future construction worker Future resident Recreational site user</p> <p><u>PSSCs</u> Fuel and fuel components Waste oils Organics Metals</p>	Surface Soil	<p>SI to confirm or deny the presence of contamination in the site media and locate source areas, if present.</p> <p>Definitive quality data for future decision-making.</p>	Surface soil TCL-VOCs TCL-SVOCs TAL-metals PCBs	Definitive + CESAS Level B data	6 direct-push soil samples + QC
			Subsurface Soil		Subsurface Soil TCL-VOCs TCL-SVOCs TAL-Metals PCBs	Definitive + CESAS Level B data	12 direct-push soil samples + QC
			Groundwater		Groundwater TCL-VOCs TCL-SVOCs TAL-Metals PCBs	Definitive + CESAS Level B data	4 direct-push groundwater samples and 1 monitoring well sample + QC
			Depositional Soil		Depositional Soils TCL-VOCs TCL-SVOCs TAL-Metals PCBs	Definitive + CESAS Level B data	4 depositional soil samples + QC
			Surface water		Surface Water TCL-VOCs TCL-SVOCs TAL-Metals PCBs	Definitive + CESAS Level B data	2 locations + QC
			Sediment		Sediment TCL-VOCs TCL-SVOCs TAL-Metals TOC PCBs Grain Size	Definitive + CESAS Level B data	2 locations + QC

ADEM - Alabama Department of Environmental Management.
 CESAS - Civil Engineering South Atlantic Savannah (U.S. Army Corps of Engineers).
 DOD - U.S. Department of Defense.
 EPA - U.S. Environmental Protection Agency.
 PCB - Polychlorinated biphenyls.
 PSSC - Potential site-screening chemical.
 QC - Quality control.
 SVOC - Semivolatile organic compound.
 TAL - Target analyte list.
 TCL - Target compound list.
 TOC - Total organic carbon (sediment only)
 USACE - U.S. Army Corps of Engineers.
 VOC - Volatile organic compound.

3.3 Conceptual Site Exposure Model

The conceptual site exposure model (CSEM) provides the basis for identifying and evaluating the potential risks to human health in the risk assessment. Graphically presenting all possible pathways by which a potential receptor may be exposed, including all sources, release and transport pathways, and exposure routes, facilitates consistent and comprehensive evaluation of risk to human health, and helps to ensure that potential pathways are not overlooked. The elements necessary to construct a complete exposure pathway and develop the CSEM include:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptors
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact with a contaminated source medium.

Potential contamination at Parcels No. 94(7), 132(7), 133(7), and 134(7) is associated with the operation of a vehicle maintenance facility (motor pool) with three gas stations in this area during World War II, and subsequent operation of a chemical impregnation plant at this site. The buildings no longer exist at the site and the entire area is paved with asphalt. The EBS indicates that grease pits constructed with concrete slabs remain at the site (ESE, 1998). During the site walk-over, structures (standard Base gas station concrete pad) that correspond to the approximate UST locations reported for the site were identified. It is possible that contaminant releases occurred from the underground storage tanks into surface soil and subsurface soil.

The site covers approximately 5 acres, and slopes slightly to the north and east towards Ingram Creek, which is a tributary of Cane Creek. Potential contaminant transport pathways include infiltration to subsurface soil, infiltration and leaching to groundwater, discharge of groundwater to the surface, and erosion and runoff into the surface water and sediment in Ingram Creek and possibly downstream to Cane creek. Dust emissions and volatilization from soil and surface water to ambient air are also of concern. Thus, media of concern subjected to sampling and analyses should be limited to surface soil, subsurface soil, depositional soil, groundwater, surface water, and sediment in Ingram Creek.

Currently, the site appears to be an unused partially open area paved with asphalt. Future plans call for the site to remain open undeveloped space (FTMC, 1997). The only plausible receptor

under current site conditions is the recreational site user, although such usage appears unlikely. Plausible future receptors include the groundskeeper, construction worker, resident, and recreational site user. The venison and fish consumption scenarios are excluded from the CSEM. The land area is paved with asphalt and is, therefore, unsuitable for hunting. Similarly, Cane Creek and Ingram Creek are unlikely sources of substantial fish for human consumption.

The contaminant release and transport mechanisms, source and exposure media, receptors and exposure pathways are summarized in Figure 3-1 and Table 3-1.

Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling, specific ecological assessment methods, etc.) will be addressed in a separate document to be issued as the habitat-specific ecological screening risk assessment work plan.

3.4 Decision-Making Process, Data Uses, and Needs

The decision-making process consists of a seven-step process that is presented in detail in Section 4.3 of the WP and will be followed during the SI at the Former Chemical Laundry and Motor Pool Area 1500 site. Data uses and needs are summarized in Table 3-1.

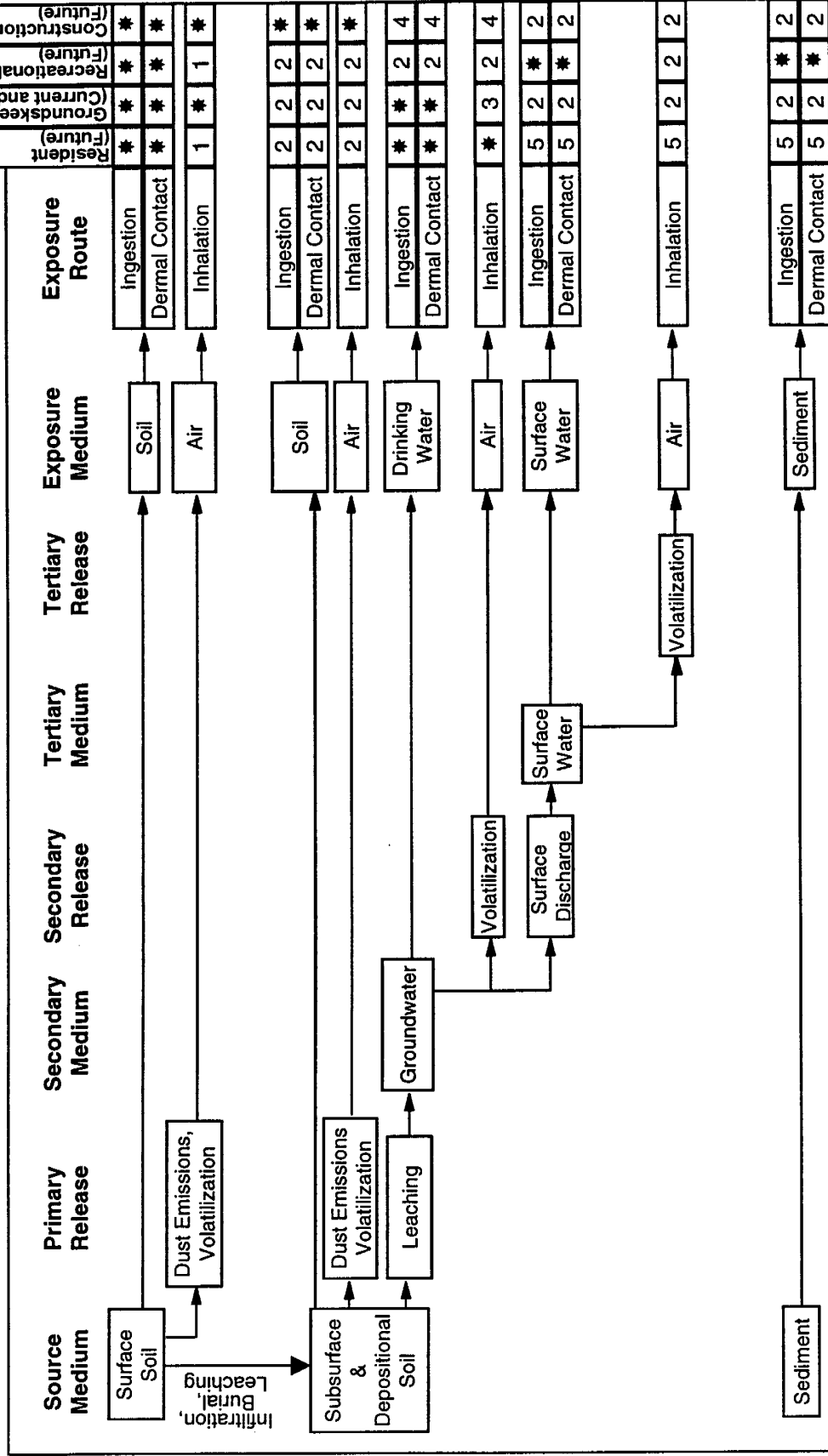
3.4.1 Risk Evaluation

Confirmation of contamination at the Former Chemical Laundry and Motor Pool Area 1500 site will be based upon a comparison of detected site-specific chemicals to site-specific screening levels developed in the WP (IT, 1998b). EPA definitive data with CESAS Level B data packages will be used to achieve detection limits sufficient to determine whether or not the established guidance criteria are exceeded in site media. This definitive data will confirm the presence or absence of site contamination and will support additional decision-making steps, such as remedial action and risk assessment, if necessary.

3.4.2 Data Types and Quality

Surface and subsurface soil, groundwater, surface water, sediment, and depositional soil will be sampled and analyzed to meet the objectives of the SI at the Former Chemical Laundry and Motor Pool Area 1500 site. Quality assurance/quality control (QA/QC) samples will be collected for all sample types as described in Chapter 4.0 of this SFSP. Samples will be analyzed by EPA-approved SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

Figure 3-1
Human Health Conceptual Site Exposure Model for Former Chemical Laundry
and Motor Pool Area 1500, Parcels 94(7), 132(7), 133(7), and 134(7)
Fort McClellan, Alabama



* = Complete exposure pathway quantified in SSSL development.

1 = Volatilization from undisturbed surface soil deemed insignificant; soil is likely to be paved or vegetated, reducing dust emissions to insignificant levels; inhalation pathway not quantified.

2 = Incomplete exposure pathway.

3 = Although theoretically complete, this pathway is judged to be insignificant.

4 = Although theoretically complete, these pathways are not quantified for the construction worker because SSSLs developed for the groundskeeper would be at least as restrictive.

5 = Although theoretically complete, SSSLs for these pathways are developed only for the recreational site user. SSSLs developed for the recreational site user may be used to estimate risk for this receptor.

3.4.3 Precision, Accuracy, and Completeness

Laboratory requirements of precision, accuracy, and completeness for this SI are provided in Chapter 9.0 of the QAP.

4.0 Field Activities

4.1 Utility Clearances

Prior to performing any intrusive sampling, a utility clearance will be performed at all locations where soil and groundwater samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP. The site manager will mark the proposed locations with stakes, coordinate with the installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are cleared, the stakes will be labeled as cleared.

4.2 Surface Geophysical Survey

Geophysical survey techniques offer the best approach to locating potential USTs and any associated underground piping. A surface geophysical survey using magnetics, time- and frequency-domain EM induction, and GPR techniques will be conducted over the Former Chemical Laundry and Motor Pool Area 1500 (Parcels 94[7], 132[7], 133[7], and 134[7]) to locate any existing USTs at the site. Six USTs have been reported to have been located at this site: two 10,000-gallon tanks at each of the former three gas station buildings. Three structures that correspond to the probable gas stations exist at the site.

4.2.1 Methodology and Instrumentation

The magnetic surveys will be conducted using a Geometrics G-858G magnetic gradiometer (for collecting survey data) and a Geometrics G-856AX magnetometer or equivalent (for collecting base station data). The time-domain EM surveys will be conducted using a Geonics EM61 high-resolution metal detector coupled to an Omnidata DL720 digital data logger. Frequency-domain EM surveys will be conducted using a Geonics EM31 and EM34-3XL terrain conductivity meter, each coupled to an Omnidata DL720 digital data logger. Use of the G-858G and the EM31 is the preferred method of detecting tanks; however, in areas of significant cultural interference (e.g., structures, fences, reinforced concrete), the EM61 will be employed since this system is less affected by surface culture. The EM34-3XL surveys will be conducted based on site-specific conditions in which deep burial of target materials is suspected. The GPR survey will be conducted using a Geophysical Survey Systems Inc. (GSSI) System-2P or equivalent, coupled to either 200- or 400-megahertz antennas, depending on site conditions and signal attenuation. If required, a Metrotech 9860-NRL EM utility locator or equivalent will be used to confirm the presence or absence of metallic subsurface utilities, which may be evident as linear anomalies in the EM31 or EM61 contour maps.

Geophysical survey procedures to be used to conduct the investigation, including survey control, equipment calibration, field base station and data validation, data processing and interpretation, and file tracking procedures, will be in accordance with the methods and procedures outlined in Chapter 4.0 and Attachment 1 of the SAP and the following IT standard operating procedures for geophysical investigations:

- ITGP-001: Surface Magnetic Surveys
- ITGP-002: Surface Frequency-Domain Electromagnetic Surveys
- ITGP-003: GPR Surveys
- ITGP-004: Surface Time-Domain Electromagnetic Surveys
- ITGP-005: Global Positioning System (GPS) Surveys.

The following tasks will be performed prior to conducting the survey:

- Review existing site surface and subsurface information (e.g., aerial photographs, utility maps, boring logs, etc.).
- Evaluate the potential influence of cultural features (e.g., overhead and subsurface utilities, fences, buildings, etc.).
- Conduct a visual inspection of the sites to verify the likely locations of the target USTs.
- Conduct reconnaissance scans across the general area of the sites with the magnetic and/or EM instruments to determine whether geophysical anomalies exist within the proposed survey areas and/or near the proposed boundaries. The geophysical survey area boundaries for each site will be chosen in the field based on these results.

Following visual inspection of the site and evaluation of reconnaissance scans with the instruments, base grids will be staked throughout the site such that the resolution objectives of the investigation are achieved (typically 50- to 100-foot centers). The base grids will be established using either a GPS or conventional civil surveying techniques. The geophysics base grids will be referenced to the Alabama State Plane Coordinate System. Using the base grids as a reference, the geophysics crew will mark control points on 20-foot centers throughout the site with surveyor's paint and/or plastic pinflags. To the extent possible, the grids will be oriented in the north to south (N-S) direction. If vegetation or surface metal is present, it shall be removed where necessary prior to collecting geophysical data.

After the survey grids are complete and control points are marked, all surface objects that could potentially affect the geophysical data (e.g., surface metal, variations in topography, overhead utilities, etc.) will be mapped using the GPS so that anomalies caused by these objects can be correctly interpreted.

Geophysical data processing will be completed in the field following the survey. The EM and magnetic data will be presented as color-enhanced contour maps to facilitate recognition of subtle anomalies. Geophysical anomalies will be field-checked to verify their source as either surface culture or subsurface objects/debris. Surface source materials responsible for the observed geophysical anomalies will be documented on the contour maps. Anomalies caused by subsurface source materials the size of a UST will be marked in the field for further characterization with GPR. GPR will be used to discriminate between anomalies caused by USTs and those potentially caused by pits containing significant metal debris.

Geophysical results will be used to properly position the proposed sample locations at the site. The conclusions from the geophysical survey at this site will be incorporated into the SI report.

4.2.2 Areal Coverage

The Former Chemical Laundry and Motor Pool Area 1500 site geophysical surveys will encompass an area of approximately 5 acres (Figure 1-2). The following steps will be performed at the site:

- G-858G magnetic gradiometer data will be collected at 0.5-second intervals (approximate 2.0- to 2.5-foot intervals) along N-S oriented survey lines spaced 10 feet apart.
- EM31 survey data will be collected at 5-foot intervals along N-S and east to west (E-W) oriented survey lines spaced 10 feet apart.
- EM34-3XL survey data will be collected, if necessary, using the 10- and 20-meter intercoil spacing configuration. Data will be collected in the vertical and horizontal dipole orientations at 2.5-meter intervals along N-S oriented survey lines spaced 2.5 meters apart.
- EM61 survey data will be collected at approximate 2.5-foot intervals along N-S and E-W oriented survey lines spaced 5 feet apart.
- GPR profile data will be collected to further characterize anomalies potentially representing the USTs seen in the magnetic and/or EM data. The orientation and length of the GPR lines will be chosen in the field to yield the most usable results.

- In areas of the site where linear EM31 or EM61 anomalies potentially representing pipelines/utilities are observed in the contoured data, the lines will be verified with the Metrotech 9860-NRL EM utility locator. Verification is necessary since the anomalous response caused by subsurface utilities may sometimes be mistaken for large buried metal objects. The locations of interpreted pipelines will be marked in the field with surveyor's paint and placed on the site map.

It is anticipated that three of the geophysical surveys described will be conducted: G-858G magnetic gradiometer, EM31, and EM61. However, as field conditions dictate, some or all of the survey techniques will be utilized. Due to the limited information concerning the location of the potential USTs, the most efficient reconnaissance process will be to address the complete site with the geophysical surveys instead of targeting any specific part of the site.

Note: The geophysical survey at this site was completed in September 1998. The data is currently being reviewed and evaluated.

4.2.3 Underground Storage Tank Exploratory Test Pits

Upon completion of the geophysical survey at the site, the data will be reviewed for possible anomalies indicative of USTs. Anomalies that are found of typical size and in logical areas for USTs (i.e., adjacent to the gas station foundations) will be identified and labeled as USTs. Anomalies that are of typical sizes but not in logical locations for USTs will be labeled as potential USTs.

At each anomaly labeled as a potential UST, an exploratory test pit will be excavated to determine if the feature or anomaly detected is, or is not, a UST. These UST exploratory test pits will be excavated using a backhoe equipped with a 3-foot-wide bucket. If the presence of a UST is confirmed, the UST will not be removed. The excavated soil will be returned to the test pit and the location marked with a stake. The location and observations will be recorded in the field log.

If some type of material other than a UST is found, the type of material and location will be noted in the field log and the material will be placed back in the excavation. The location will be marked with a stake. If nothing is found in the excavation, the test pit will be backfilled with the excavated material. The label "potential UST" will be removed from the location of the geophysical anomaly.

4.3 Environmental Sampling

The environmental sampling program during the SI at the Former Chemical Laundry and Motor Pool Area 1500 includes the collection of surface soil, subsurface soil, depositional soil, ground-water, surface water, and sediment samples for chemical analysis.

A geophysical survey has been conducted at the site prior to initiating the environmental sampling program. Locations of suspected anomalies identified as USTs will be marked in the field with surveyor's paint. Exact sampling locations will be marked at each of the suspected anomalies identified during the geophysical survey. For each suspected anomaly identified as a UST (up to six) at the Former Chemical Laundry and Motor Pool Area 1500 site, samples will be collected as presented in Table 4-1. The proposed sampling locations shown on Figure 4-1 are approximate and will be adjusted after the geophysical survey is completed.

4.3.1 Surface Soil Sampling

A total of six surface soil samples will be collected from the Former Chemical Laundry and Motor Pool Area 1500 site.

4.3.1.1 Sample Locations and Rationale

Surface soil sampling rationale is presented in Table 4-1. A total of six surface soil samples will be collected from the Former Chemical Laundry and Motor Pool Area 1500 site. Surface soil samples at the site will be collected from the upper 1 foot of soil at each sampling location. The proposed surface soil sampling locations are shown on Figure 4-1.

4.3.1.2 Sample Collection

Surface soil samples will be collected using the direct-push methodology as specified in Section 4.7.1.1 of the SAP. Surface soil samples to be collected at the Former Chemical Laundry and Motor Pool Area 1500 site and their sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2.

Sample documentation and chain of custody (COC) will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

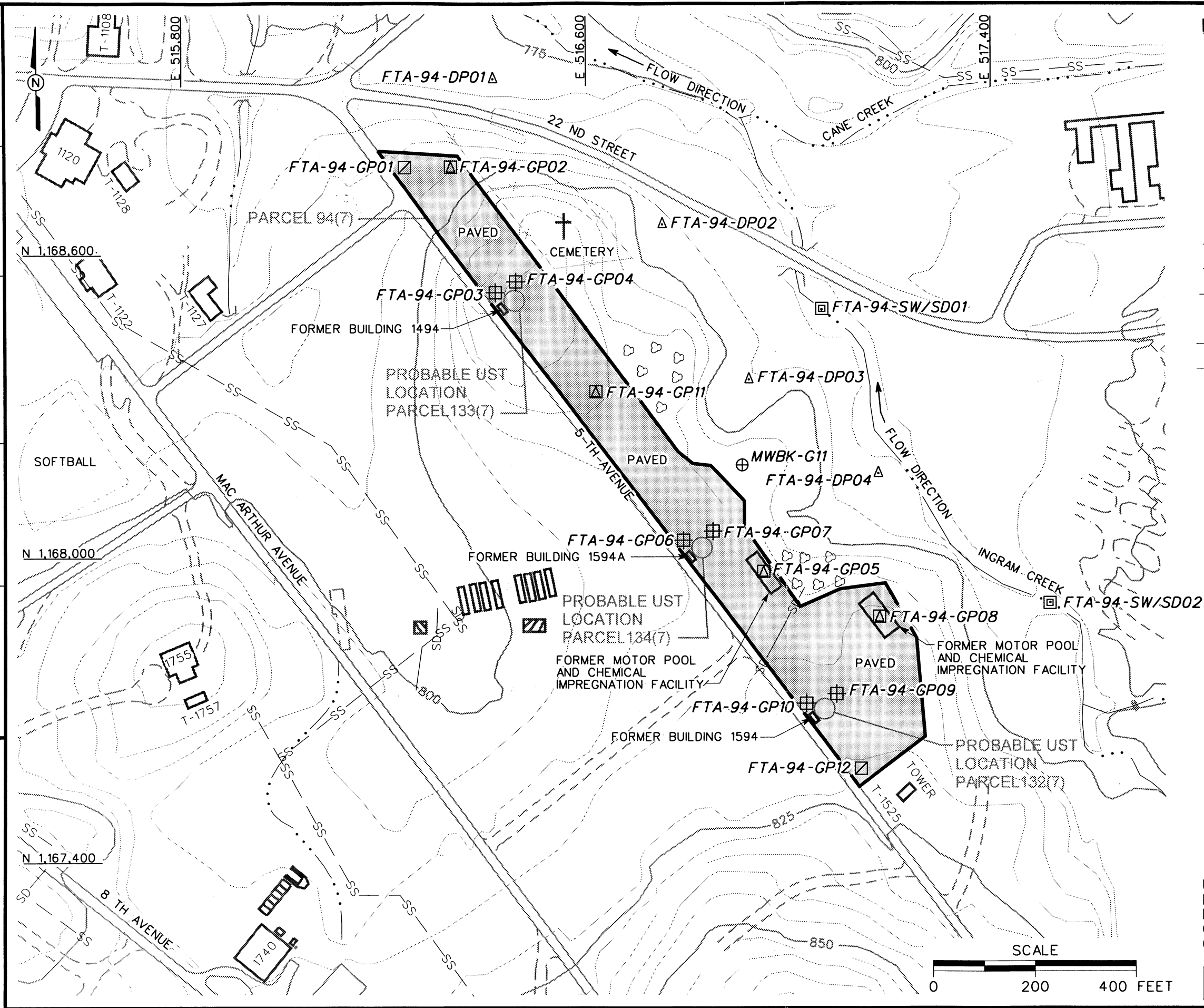
Table 4-1

Site Sampling Rationale
Former Chemical Laundry and Motor Pool Area 1500, Parcels 94(7), 132(7), 133(7), and 134(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Media	Sampling Location Rationale
FTA-94-GP01	SURFACE SOIL SUBSURFACE SOIL	Sample will be collected downgradient of the former USTs at Building 1494 and from the northwestern corner of the Former Chemical Laundry and Motor Pool area to determine if potential site-screening chemicals (PSSC) were released during the operation of the former gas station and from the previous vehicle maintenance activities.
FTA-94-GP02	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Sample will be collected downgradient of the former USTs at Building 1494 and from the northwestern corner of the Former Chemical Laundry and Motor Pool area to determine if PSSCs were released during the operation of the former gas station and from the previous vehicle maintenance activities.
FTA-94-GP03	SUBSURFACE SOIL	Sample will be collected in the immediate vicinity of one of the two 10,000 gallon tanks at Building 1494. Source area sample will be collected to confirm presence or absence of PSSCs.
FTA-94-GP04	SUBSURFACE SOIL	Sample will be collected in the immediate vicinity of one of the two 10,000-gallon tanks at Building 1494. Source area sample will be collected to confirm presence or absence of PSSCs.
FTA-94-GP05	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Sample will be collected in the center of the Former Chemical Laundry and Motor Pool Facility to determine if PSSCs were released during vehicle maintenance and chemical impregnation activities.
FTA-94-GP06	SUBSURFACE SOIL	Sample will be collected in the immediate vicinity of one of the two 10,000-gallon tanks at Building 1594A. Source area sample will be collected to confirm presence or absence of PSSCs.
FTA-94-GP07	SUBSURFACE SOIL	Sample will be collected in the immediate vicinity of one of the two 10,000 gallon tanks at Building 1594A. Source area sample will be collected to confirm presence or absence of PSSCs.
FTA-94-GP08	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Sample will be collected from the location of the Former Chemical Laundry and Motor Pool Facility to determine if PSSCs were released during vehicle maintenance and chemical impregnation activities.
FTA-94-GP09	SUBSURFACE SOIL	Sample will be collected in the immediate vicinity of the two 10,000-gallon tanks at Building 1594. Source area sample will be collected to confirm presence or absence of PSSCs.
FTA-94-GP10	SUBSURFACE SOIL	Sample will be collected in the immediate vicinity of the two 10,000-gallon tanks at Building 1594. Source area sample will be collected to confirm presence or absence of PSSCs.
FTA-94-GP11	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Samples will be collected within the Former Motor Pool area to determine presence or absence of PSSCs.
FTA-94-GP12	SURFACE SOIL SUBSURFACE SOIL	Sample collected from the southwest area of the Former Chemical Laundry and Motor Pool Facility to determine if PSSCs were released during vehicle maintenance and chemical impregnation activities.
FTA-94-MW01	GROUNDWATER	A groundwater sample will be collected from the existing background monitoring well MW-BK-G11 located in the central eastern portion of the Former Motor Pool building and downgradient of USTs at Building 1594A to assess potential migration of contaminants from the source areas.
FTA-94-DEP01 FTA-94-DEP02 FTA-94-DEP03 FTA-94-DEP04	DEPOSITIONAL SOIL	Depositional soil will be collected between the site and Ingram Creek. Sampling locations represent lower elevation areas associated with the site where surface water runoff could collect and potentially percolate into the substratum, or potentially deposit dissolved materials after evaporation
FTA-94-SW/SD01 FTA-94-SW/SD02	SURFACE WATER SEDIMENT	Potential groundwater flow from the site toward Ingram Creek could influence sediment and surface water within the creek. Sample locations represent points within Ingram Creek that could potentially integrate contamination migrating from the site by groundwater flow and infiltration.

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PROJ. MGR.: J. YACOB	PROJ. NO.: 774645
DRAFT. CHK. BY: A. MAYILA	ENGR. CHK. BY: A. MAYILA
DATE LAST R.L.	DRAWN BY: D. BILLINGSLEY
STARTING DATE: 06/02/98	DATE: 06/02/98



- ### LEGEND
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS
 - TREES / TREELINE
 - PARCEL BOUNDARY
 - BRIDGE
 - CULVERT WITH HEADWALL
 - SURFACE DRAINAGE / CREEK
 - FENCE
 - SANITARY SEWER LINE
 - STORM DRAINAGE LINE
 - EXISTING RESIDUUM MONITORING WELL
 - PROPOSED SURFACE WATER/SEDIMENT SAMPLE
 - PROPOSED SURFACE AND SUBSURFACE SOIL SAMPLE
 - PROPOSED SUBSURFACE SOIL SAMPLE
 - PROPOSED GROUNDWATER, SURFACE AND SUBSURFACE SOIL SAMPLE
 - PROPOSED DEPOSITIONAL SOIL SAMPLE

FIGURE 4-1
PROPOSED SAMPLING LOCATIONS
FORMER CHEMICAL LAUNDRY AND
MOTOR POOL AREA 1500
PARCELS 94(7), 132(7), 133(7)
AND 134(7)

U. S. ARMY CORPS OF ENGINEERS
 MOBILE DISTRICT
 FORT McCLELLAN
 CALHOUN COUNTY, ALABAMA
 Contract No. DACA21-96-D-0018



Table 4-2

Surface, Subsurface, and Depositional Soil Sample Designations and QA/QC Sample Quantities
Former Chemical Laundry and Motor Pool Area 1500, Parcels 94(7), 132(7), 133(7), and 134(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-94-GP01	FTA-94-GP01-SS-EM0001-REG	0-1.0 *				TCL VOCs, TCL SVOCs PCBs, TAL Metals
FTA-94-GP02	FTA-94-GP01-DS-EM0002-REG					
FTA-94-GP02	FTA-94-GP02-SS-EM0003-REG	0-1.0 *				TCL VOCs, TCL SVOCs PCBs, TAL Metals
FTA-94-GP02	FTA-94-GP02-DS-EM0004-REG		FTA-94-GP02-DS-EM0005-FD	FTA-94-GP04-DS-EM0006-FS		
FTA-94-GP03	FTA-94-GP03-DS-EM0007-REG	^b				TCL VOCs, TCL SVOCs PCBs, TAL Metals
FTA-94-GP04	FTA-94-GP04-DS-EM0008-REG	^b				TCL VOCs, TCL SVOCs PCBs, TAL Metals
FTA-94-GP05	FTA-94-GP05-SS-EM0009-REG	0-1.0 *				TCL VOCs, TCL SVOCs PCBs, TAL Metals
FTA-94-GP05	FTA-94-GP05-DS-EM0010-REG					
FTA-94-GP06	FTA-94-GP06-DS-EM0011-REG	^b				TCL VOCs, TCL SVOCs PCBs, TAL Metals
FTA-94-GP07	FTA-94-GP07-DS-EM0012-REG	^b				TCL VOCs, TCL SVOCs PCBs, TAL Metals
FTA-94-GP08	FTA-94-GP08-SS-EM0013-REG	0-1.0 *				TCL VOCs, TCL SVOCs PCBs, TAL Metals
FTA-94-GP08	FTA-94-GP08-DS-EM0014-REG					
FTA-94-GP09	FTA-94-GP09-DS-EM0015-REG	0-1.0 ^b				TCL VOCs, TCL SVOCs PCBs, TAL Metals
FTA-94-GP10	FTA-94-GP10-DS-EM0016-REG	^b				TCL VOCs, TCL SVOCs PCBs, TAL Metals
FTA-94-GP11	FTA-94-GP11-SS-EM0018-REG	0-1.0 *			FTA-94-GP11-DS-EM0018-MS	TCL VOCs, TCL SVOCs PCBs, TAL Metals
FTA-94-GP11	FTA-94-GP11-DS-EM0018-REG				FTA-94-GP11-DS-EM0018-MSD	
FTA-94-GP12	FTA-94-GP12-SS-EM0019-REG	0-1.0 *				TCL VOCs, TCL SVOCs PCBs, TAL Metals
FTA-94-GP12	FTA-94-GP12-DS-EM0020-REG					
FTA-94-DEP01	FTA-94-DEP01-DEP-EM0021-REG	0-1.0				TCL VOCs, TCL SVOCs PCBs, TAL Metals
FTA-94-DEP02	FTA-94-DEP02-DEP-EM0022-REG	0-1.0				TCL VOCs, TCL SVOCs PCBs, TAL Metals
FTA-94-DEP03	FTA-94-DEP03-DEP-EM0023-REG	0-1.0				TCL VOCs, TCL SVOCs PCBs, TAL Metals
FTA-94-DEP04	FTA-94-DEP04-DEP-EM0024-REG	0-1.0				TCL VOCs, TCL SVOCs PCBs, TAL Metals

* Actual sample depth selected for analysis will be at the discretion of the on-site geologist and will be based on field observation.

^b If UST is identified, sample will be collected immediately beneath the bottom of the tank.

QA/QC - Quality assurance/quality control

MS/MSD - Matrix spike/matrix spike duplicate

SVOC - Semivolatile organic compound

TAL - Target analyte list.

TCL - Target compound list

VOC - Volatile organic compound

Surface soil samples collected at the site will be submitted for laboratory analyses of target compound list (TCL), volatile organic compounds (VOC), TCL semivolatile organic compounds (SVOC), TAL metals, and polychlorinated biphenyls (PCB).

4.3.2 Subsurface Soil Sampling

A total of 12 subsurface soil samples will be collected from the Former Chemical Laundry and Motor Pool Area 1500 site.

4.3.2.1 Sample Locations and Rationale

Subsurface soil sampling rationale is presented in Table 4-1. A total of 12 subsurface soil samples will be collected from the Former Chemical Laundry and Motor Pool Area 1500 site. The proposed subsurface soil sampling locations are shown on Figure 4-1.

4.3.2.2 Sample Collection

Subsurface soil samples will be collected using direct-push methodology specified in Sections 4.7.1.1 and 4.9.1.1 of the SAP. Subsurface soil samples will be collected for the first 12 feet or until either groundwater or refusal is reached, whichever occurs first. Samples from the boring will be field screened using a photoionization detector (PID). The soil sample from each boring exhibiting the highest reading on a PID will be sent to the laboratory for chemical analysis. The deepest soil sample interval collected will be submitted to the laboratory for chemical analysis if no PID readings exceeding background (ambient air) level are detected.

For soil borings that will be installed in the vicinity of the USTs, subsurface soil samples will be collected immediately below the bottom of the UST. However, if other depth intervals indicate higher levels of potential site-specific chemicals, an additional sample will be collected and sent to the laboratory for analysis. Samples to be collected at the Former Chemical Laundry and Motor Pool Area 1500 site and their sample designations, depths, and required QA/QC sample quantities, are listed in Table 4-2.

Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

Subsurface soil samples collected at the site will be submitted for laboratory analyses of TCL VOCs, TCL SVOCs, TAL metals, and PCBs.

4.3.3 Groundwater Sampling

A total of five groundwater samples will be collected from the Former Chemical Laundry and Motor Pool Area 1500 site.

4.3.3.1 Sample Locations and Rationale

Groundwater sampling rationale is presented in Table 4-1. A total of five groundwater samples will be collected from the Former Chemical Laundry and Motor Pool Area 1500 site. Four groundwater samples will be collected from direct-push temporary wells and one sample will be collected from the existing background monitoring well MW-BK-G11. The proposed groundwater sampling locations are presented on Figure 4-1.

4.3.3.2 Sample Collection

Four groundwater samples will be collected from direct-push borings completed as temporary wells. The temporary wells will be advanced to a depth sufficient to allow collection of a groundwater sample at each location (approximately 4 or 5 feet below the soil/water table interface, if possible). One groundwater sample will be collected from the existing background monitoring well MW-BK-G11 (Figure 4-1). Sample collection will be performed as outlined in Sections 4.7.1.1 and 4.9.1.4 of the SAP.

Prior to sampling the newly installed temporary wells and the existing well, static water levels will be measured from the wells at the site to assess the groundwater flow in the underlying aquifer. Water level measurements will be performed as outlined in Section 4.18 of the SAP.

Groundwater samples to be collected at the Former Chemical Laundry and Motor Pool Area 1500 site, and their sample designations, depths, and required QA/QC sample quantities, are listed in Table 4-3.

Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

Groundwater samples collected at the site will be submitted for laboratory analyses of TCL VOCs, TCL SVOCs, TAL metals, and PCBs.

Table 4-3

Groundwater Sample Designations and QA/QC Sample Quantities
Former Chemical Laundry and Motor Pool Area 1500, Parcels 94(7), 132(7), 133(7), and 134(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples		MS/MSD	Analytical Suite
			Field Duplicates	Field Splits		
FTA-94-GP02	FTA-94-GP02-GW-EM3001-REG	Water Table *				TCL VOCs, TCL SVOCs PCBs, Tot. TAL Metals
FTA-94-GP05	FTA-94-GP05-GW-EM3002-REG	Water Table *	FTA-94-GP05-GW-EM3003-FD	FTA-94-GP05-GW-EM3004-FS		TCL VOCs, TCL SVOCs PCBs, Tot. TAL Metals
FTA-94-GP08	FTA-94-GP08-GW-EM3005-REG	Water Table *				TCL VOCs, TCL SVOCs PCBs, Tot. TAL Metals
FTA-94-GP11	FTA-94-GP11-GW-EM3006-REG	Water Table *			FTA-94-GP11-GW-EM3006-MS	TCL VOCs, TCL SVOCs PCBs, Tot. TAL Metals
FTA-94-MW01	FTA-94-MW01-GW-EM3007-REG	32-42			FTA-94-GP11-GW-EM3006-MSD	TCL VOCs, TCL SVOCs PCBs, Tot. TAL Metals

* Temporary well will be advanced to a depth where sufficient water to collect a sample is encountered.

QA/QC - Quality assurance/quality control

MS/MSD - Matrix spike/matrix spike duplicate

TCL - Target compound list

VOC - Volatile organic compound

SVOC - Semivolatile organic compound

Cl - Chlorinated

OP - Organophosphorus

TAL - Target analyte list

4.3.4 Surface Water Sampling

4.3.4.1 Sample Locations and Rationale

Surface water sampling rationale is presented in Table 4-1. Two surface water samples will be collected from Ingram Creek, located east of the Former Chemical Laundry and Motor Pool Area 1500. Figure 4-1 shows the proposed surface water sample locations.

4.3.4.2 Sample Collection

Two surface water samples will be collected in areas where surface water runoff is most likely to occur. Surface water samples to be collected at the Former Chemical Laundry and Motor Pool Area 1500 and their designated sample numbers, along with QA/QC sample quantities, are listed in Table 4-4. Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

4.3.5 Sediment Sampling

4.3.5.1 Sample Locations and Rationale

Sediment sampling rationale is presented in Table 4-1. Two sediment samples will be collected from Ingram Creek, located east of the Former Chemical Laundry and Motor Pool Area 1500. Figure 4-1 shows the proposed sediment sample locations.

4.3.5.2 Sample Collection

Sediment samples to be collected at the Former Chemical Laundry and Motor Pool Area 1500 and their designated sample numbers, along with QA/QC sample quantities, are listed in Table 4-4. Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

4.3.6 Depositional Soil Sampling

Four depositional soil samples will be collected from the site.

Table 4-4

**Surface Water and Sediment Sample Designations and QA/QC Sample Quantities
Former Chemical Laundry and Motor Pool Area 1500, Parcels 94(7), 132(7), 133(7), and 134(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-94-SW/SD01	FTA-94-SW/SD01-SW-EM2001 REG	N/A				TCL VOCs, TCL SVOCs PCBs, Tot. TAL Metals
FTA-94-SW/SD01	FTA-94-SW/SD01-SD-EM1001 REG	0 - .5				TCL VOCs, TCL SVOCs PCBs, Tot. TAL Metals TOC, Grain Size
FTA-94-SW/SD02	FTA-94-SW/SD02-SW-EM2002 REG	N/A				TCL VOCs, TCL SVOCs PCBs, Tot. TAL Metals
FTA-94-SW/SD02	FTA-94-SW/SD02-SD-EM1002 REG	0 - .5				TCL VOCs, TCL SVOCs PCBs, Tot. TAL Metals TOC, Grain Size

CI - Chlorinated.

MS/MSD - Matrix spike/matrix spike duplicate.

OP - Organophosphorus.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

4.3.6.1 Sample Locations and Rationale

Depositional soil sampling rationale is presented in Table 4-1. Four depositional soil samples will be collected from the area located east of the Former Chemical Laundry and Motor Pool Area 1500 site between the site and Ingram Creek, a tributary of Cane Creek. Figure 4-1 shows the proposed depositional soil sample locations.

4.3.6.2 Sample Collection

Depositional soil sample collection will be conducted in accordance with the procedures for surface soil sample collection specified in Section 4.9.1.1 of the SAP. Depositional soil samples to be collected at the former Chemical Laundry and Motor Pool Area 1500 site and their sample designations, depths, and required QA/QC sample quantities, are listed in Table 4-2.

Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

Depositional soil samples collected at the site will be submitted for laboratory analyses of TCL VOCs, TCL SVOCs, TAL metals, and PCBs.

4.4 Decontamination Requirements

Decontamination will be performed on sampling and nonsampling equipment primarily to ensure that contaminants are not introduced into samples from location to location. Decontamination of sampling equipment will be performed in accordance with the procedures presented in Section 4.10.1.1 of the SAP. Decontamination of nonsampling equipment will be performed in accordance with the procedures presented in Section 4.10.1.2 of the SAP.

4.5 Surveying of Sample Locations

Sampling locations will be marked with pin flags, stakes, and/or flagging and will be surveyed using either GPS or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the Alabama State Plane coordinate system, 1983 North American Datum (NAD83). Elevations will be referenced to the National Geodetic Vertical Datum of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Horizontal coordinates for all soil, sediment, and surface water locations will be recorded using a GPS to provide accuracy within 1 meter. Because of the need to use temporary wells to determine water levels, a higher level of accuracy is required. Temporary wells will be surveyed to an accuracy of 0.1 foot for horizontal coordinates and 0.01 foot for elevations, using survey-grade GPS techniques and/or conventional civil survey techniques, as required. Permanent monitoring well locations will be surveyed by a registered professional land surveyor to provide the required accuracy of 0.1 foot for horizontal coordinates and 0.01 foot for elevations.

Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.

4.6 Analytical Program

Samples collected at locations specified in Chapter 4.0 will be analyzed for the specified suite of chemical and elements based on the history of the site usage, as well as EPA, ADEM, FTMC and USACE requirements. Target analyses for samples collected from the Former Chemical Laundry and Motor Pool Area 1500 site consist of the following list of parameters:

- TCL VOCs – Method 5035/8260B
- TCL SVOCs – Method 8270C
- TAL Metals – Method 6010B/7000
- PCBs – Method 8082
- Total Organic Carbon – Method 9060 (sediment only)
- Grain Size – American Society for Testing and Materials D421/422 (sediment only).

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-5 in this SSFP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). The chemical data will be reported via hard copy data packages by the laboratory using CLP-like forms. These packages and will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

Table 4-5

Analytical Samples
Former Chemical Laundry and Motor Pool Area 1500 (Parcels 94(7), 132(7), 133(7), 134(7))
Fort McClellan, Calhoun County, Alabama

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples			QA/QC Samples ^(a)					Quanterra	
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (5%)	Splits w/ QA Lab (5%)	MS/MSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)	Total No. Analysis	QA Lab Total No. Analysis
Former Chem Laundry and Motor Pool Area 1500 - Parcels 94(7), 132(7), 133(7), 134(7): 5 groundwater, 6 surface soil, 12 subsurface soil, 4 depositional soil, 2 surface soil, 2 sediment, 2 surface water													
TCL VOCs	8260B	water	normal	7	1	7	1	1	1	3	1	14	1
TCL SVOCs	8270C	water	normal	7	1	7	1	1	1		1	11	1
PCBs	8082	water	normal	7	1	7	1	1	1	1	1	11	1
Tot TAL Metals	6010B/7000	water	normal	7	1	7	1	1	1		1	11	1
TCL VOCs	8260A	soil	normal	24	1	24	1	1	1	1	1	28	1
TCL SVOCs	8270B	soil	normal	24	1	24	1	1	1		1	28	1
PCBs	8082	soil	normal	24	1	24	1	1	1	1	1	28	1
TAL Metals	6010/7000	soil	normal	24	1	24	1	1	1		1	28	1
Tot Org Carb	9060	sediment	normal	2	1	2						2	0
Grain Size	ASTM	sediment	normal	2	1	2						2	0
Former Chemical Laundry and Motor Pool Area 1500 Subtotal:							8	8	8	3	8	163	8

^(a) Field duplicate, QA split, and MSMSD samples were calculated as a percentage of the field samples collected per site and were rounded to the nearest whole number.

Trip blank samples will be collected in association with water matrix samples for VOC analysis only. Assumed four field samples per day to estimate trip blanks. Equipment blanks will be collected once per event whenever sampling equipment is field decontaminated and re-used. They will be repeated weekly for sampling events that are anticipated to last more than 1 week. Assumed 20 field samples will be collected per week to estimate number of equipment blanks.

Ship samples to :

Quanterra Environmental Services
 5815 Middlebrook Pike
 Knoxville, Tennessee 37921
 Attn: John Reynolds
 Tel: 423-588-6401 Fax: 423-584-4315

USACE Laboratory split samples
 are shipped to:

USACE South Atlantic Division Laboratory
 Attn: Sample Receiving
 611 South Cobb Drive
 Marietta, Georgia 30060-3112
 Tel: 770-919-5270

QA/QC - Quality assurance/quality control.
 MSMSD - Matrix spike/matrix spike duplicate.
 VOC - Volatile organic compound.
 SVOC - Semivolatile organic compound.
 TAL - Target analyte list.
 TCL - Target analyte list.

The on-site sample coordinator will provide sampling containers, preservatives, and coordinate sampling procedures to the field sampling crews in accordance with Table 5-1 in the QAP.

4.7 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping will follow the procedures as specified in Section 4.13.2 of the SAP. Completed analysis request/chain-of-custody records will be secured and included with each shipment of coolers to:

Attn: Sample Receiving
Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Telephone: (423) 588-6401.

QA split samples collected for the USACE laboratory will be shipped to the following address:

Attn: Sample Receiving
USACE South Atlantic Division Laboratory
611 South Cobb Drive-3112
Marietta, Georgia 30060
Telephone: (770) 919-5270.

4.8 Investigation-Derived Waste Management

Management and disposal of the investigation-derived wastes (IDW) will follow procedures and requirements as described in Section 4.11 and Appendix D of the SAP. The IDW expected to be generated at the Former Chemical Laundry and Motor Pool Area 1500 site will include decontamination fluids and disposable personal protective equipment. The IDW will be staged in the fenced area surrounding Buildings 335 and 336 while awaiting final disposal.

1 ***5.0 Project Schedule***

2

3 The project schedule for the SI activities will be provided by the IT project manager to the Base
4 Closure Team on a monthly basis.

6.0 References

Environmental Science and Engineering Inc. (ESE), 1998, *Final Environmental Baseline Survey, Fort McClellan, Alabama*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

Fort McClellan (FTMC), 1997, *Fort McClellan Comprehensive Reuse Plan, Fort McClellan Reuse and Redevelopment Authority of Alabama, Implementation Strategy*, November.

IT Corporation (IT), 1998a, *Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama*, August.

IT Corporation (IT), 1998b, *Final Installation-Wide Work Plan, Fort McClellan, Calhoun County, Alabama*, August.

U.S. Army Corps of Engineers (USACE), 1998, *Statement of Work for Task Order CK05, Site Investigations at Fort McClellan, Alabama*, January.

U.S. Army Corps of Engineers (USACE), 1994, *Requirements for the Preparation of Sampling and Analysis Plans*, Engineer Manual EM 200-1-3, September 1.

U.S. Department of Agriculture (USDA), 1961, *Soil Survey, Calhoun County, Alabama*, Soil Conservation Service, Series 1958, No. 9, September.

U.S. Environmental Protection Agency (EPA), 1993, *Data Quality Objectives Process for Superfund, Interim Final Guidance*, EPA 540-R-93-071, September.